THE PLANT DISEASE REPORTER

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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CHECK LIST REVISION

Freeman Weiss

SPHENOPHOLIS (GRAMINEAE)

SPHENOPHOLIS SPP., WEDGEGRASS, especially S. OBTUSATA (Michx.) Scribn. (1), S. INTERMEDIA Rydb. (2), S. NITIDA (Spreng.) Scribn. (3), S. PALLENS (Spreng.) Scribn. (4). Slender perennial or sometimes annual grasses, occurring in prairies, old fields, and open woods; the first two nearly throughout the U.S., the last two eastern and southern. Of minor forage value.

Colletotrichum graminicolum (Ces.) G.W.Wils., anthracnose. N. Dak. (1).
Epichloë typhina (Pers. ex Fr.) Tul., cat-tail, choke. Ga., Miss., N. Car. (1); Md. (3); Ohio (4).
Puccinia eatoniae Arth. (II,III), rust. Mich. to Fla., Okla. and N. Dak. (1); W.Va. (2); Del., Miss., S.Car., Va. (3); N.Y. to Tenn., Nebr. and N.Dak. (4). Composed of 2 races, P. e. var. ranunculi Mains, with O and I on Ranunculus spp., especially R. abortivus L.; and P. e. var. myosotidis Mains, with O and I on Myosotis virginica (L.) B.S.P.
Puccinia graminis Pers. (II,III), stem rust. Calif., Kans., La., N. Dak. (1). The var. avenae Eriks. & Henn. identified.
Sclerotium rhizodes Auers., leaf rot. Wis. (4)
Selenophoma donacis (Pass.) Sprague & A.G.Johns. var., speckle. N.Dak. (1).
Septoria sp., leaf spot. N.Dak. (1).

SPOROBOLUS (GRAMINEAE)

SPOROBOLUS AIROIDES Torr., ALKALI SACATON (1). Perennial bunch grass of alkaline meadows on the Western Plains from S.Dak. to Tex., Calif. and Wash.; furnishes forage for livestock and wildlife. S. WRIGHTII Munro, SACATON (2), more robust and limited to the Southwest, also furnishes hay.

Anguina sp., inflorescence gall. Okla. (1)
Ascochyta stipae Died., leaf spot. Wash. (1)
Bacterium agropyri (O'Gara) Stapp, bacterial slime spot. N.Dak. (1)
Hendersonia simplex Schroet., leaf spot. Wash. (1)
Phyllachora vulgata Theiss. & Syd., tar spot. Colo. (1)
Puccinia luxuriosa Syd. (II,III), rust. Mont. to Okla., Calif. and Oreg. (1). O and I on Sarcobatus vermiculatus (Hook.) Torr.
P. schedonnardi Kell. & Swing. (II,III), leaf rust. N. & S.Dak., Wyo. (1). O and I on Malvaceae.
P. simulans (Pk.) Barth. (II,III), rust. Ariz. (2). O and I unknown.
Sphacelotheca utahensis Zundel, seed smut. Utah (1).

Bends -- cause unknown. Wash. (1)

SPOROBOLUS ASPER (Michx.) Kunth., TALL DROPSEED (1); S. CLANDESTINUS (Spreng.) Hitchc. (2); S. HETEROLEPIS A.Gray (3). More or less stout, tufted perennials occurring on prairies and sandy fields, (1) and (3) from the Northeastern States to the Western Plains, (2) eastern and southern; of food value to wildlife. S. GRACILIS (Trin.) Merr. (4) of similar habit occurs typically in pine barrens of the Southeastern Coastal Plain.

Cercospora seriata Atk., leaf spot. Ala. (1)
Colletotrichum graminicolum (Ces.) G.W.Wils., anthracnose. N.Dak. (3)
Hendersonia simplex Schroet., leaf spot. Wash. (1)
Hysteropezizella andropogonis (Berk. & Curt.) Nannf., on dead culms. Ga. (2)
Phyllachora vulgata Theiss. & Syd., tar spot. Ill. (1)
Pleospora hystericides Ell. & Ev., on dead culms. Kans. (1)
Puccinia graminis Pers. (II,III), stem rust. Ala., Ill. (1)
P. sporoboli Arth. (II,III), rust. Iowa, N.Dak. (1,2); Nebr. (1). O and I on Allium spp. and Lilium umbellatum Pursh
P. vilfae Arth. & Holw. (II,III), rust. Wis. to Ala., Kans., Okla., and S.Dak. (1). O and I on Verbena spp.
Scirrhia sporoboli Atk., on culms. Ala. (1)
Selenophoma donacis (Pass.) Sprague & A.G.Johns. var., speckle. Iowa, N.Dak. (1)
Septoria andropogonis J.J.Davis var., leaf blotch. N.Dak. (3)
Stagonospora subseriata (Desm.) Sacc., on leaves. N.Dak. (3)
Uromyces sporoboli Ell. &Ev. (II,III), rust. Kans., S.Dak. (1). O and I on Allium spp.
Ustilago sporoboli Tracy & Earle, seed smut. Miss. (4)
Volutella bartholomaei Ell. &Ev., on leaves. Kans.

Bends -- cause unknown. Wash. (1)

SPOROBOLUS CRYPTANDRUS (Torr.) A.Gray, SAND DROPSEED (1). Perennial of sandy fields occurring nearly throughout the U.S. except the Southeast; of significant forage value in the Western Plains and furnishes food for wildlife. S. FLEXUOSUS (Thurb.) Rydb., MESA D. (2), of similar habit, is limited to the Southwest.

Anguina sp., nematode gall. Kans. (1),Tex. (2)
Fusarium oxysporum Schlecht. em. Snyder & Hansen, and F. scirpi C.R. Lambert & Fautr. var. acuminatum (Ell. & Ev.) Wr., secondary root rot. N.Dak. (1)
Phyllachora vulgata Theiss. & Syd., tar spot. Kans., Tex., Wis. (1)
Puccinia graminis Pers. (II,III), stem rust. Colo., Kans., N. & S. Dak., Tex. (1). The vars. secalis and tritici Eriks. & Henn. have been identified.
P. simulans (Pk.) Barth. (II,III), rust. Wis. to Tex., Ariz. and Idaho (1).
Uromyces sporoboli Ell. & Ev. (II,III), rust. S.Dak. (1)
Ustilago hypodytes (Schlecht.) Fr., stem smut. Colo. (1)

SPOROBOLUS POIRETII (Roem. & Schult.) Hitchc., SMUT GRASS (1). Perennial of waste ground and old fields in the Southern States from Md. to Fla. and Tex.; of food value to wildlife. S. INDICUS (L.) R.Br., WEST INDIES SMUT GRASS (2), of similar habit, is of worldwide distribution in warm regions but occurs only sparsely in the Gulf States. S. VAGINIFLORUS (Torr.) Wood, POVERTY DROPSEED (3), and S. VIRGINICUS (L.) Kunth., SEASHORE D. (4), are annuals occurring in sandy waste ground, the former from the Atlantic Coast to the Western Plains, the latter on the southeastern Coastal Plain; both of food value to wildlife.

Dothichloë limitata Diehl, black ring, sterility disease. Ala., Ark., Fla., Ga., La., Miss., N.Car., Va. (1)

Helminthosporium ravenelii Curt., false smut. Characteristically overgrowing the inflorescence, perhaps associated with the mucilaginous pericarp, and in turn often overgrown with molds as Tricothecium helminthosporii (Thuem.) Sacc.; its presence gives the grass its common name. General on both (1) and (2)

Tolyposporella sporoboli Jacks., leaf smut. P.R. (2)

Uromyces ignobilis (Syd.) Arth. (II,III), rust. Canal Zone, P.R. (2,4). O and I unknown.

U. sporoboli Ell. & Ev. (II,III), rust. Kans., S.Dak. (3)

Ustilago vilfae Wint., seed smut. Kans., Nebr., Pa. (3)

STENOTAPHRUM (GRAMINEAE)

STENOTAPHRUM SECUNDATUM (Walt.) Kuntze, ST. AUGUSTINE GRASS. Creeping perennial of seacoast areas from S.Car. to Fla., Tex. and southward; used for lawns and pastures. A variegated form designated as var. variegatum Hitchc. is grown for ornament.

Helminthosporium sp., foot rot. La., Tex.

Himantia stellifera Johnston, on stolons. P.R.

Meliola stenotaphri F.L.Stevens, black mildew. P.R.

Nigrospora sphaerica (Sacc.) Mason, secondary leaf spot. Fla.

Piricularia grisea (Cke.) Sacc., leaf spot. Fla., Tex.

Physarum cinereum (Batsch) Pers., slime mold. Fla., Tex.

Rhizoctonia oryzae Ryker & Gooch, leaf spot. Fla. A Pellicularia.

R. solani Kuehn, brown patch. Tex. Pellicularia filamentosa (Pat.) Rogers

Ustilago affinis Ell. & Ev., inflorescence smut. P.R.

STIPA (GRAMINEAE)

STIPA SPP., NEEDLEGRASS. Perennial bunchgrasses of mostly similar aspect occurring on the Western Plains and foothills of the Rocky Mts. to the Pacific Coast; a few (S. comata Trin. & Rupr., S. spartea Trin., and S. viridula Trin.) extending into the Central States, and one (S. avenaceoides Nash.) in the East and South. All are acceptable forage grasses when young and sufficiently abundant, but when mature the awns of some spp. are injurious to livestock and one sp. (S. robusta Scribn.) is reported to be narcotic.

STIPA SPP., cont.

Anguina graminis (Hardy) Filip., in spikelets. On S. occidentalis Thurb. in Calif.

Ascochyta graminicola Sacc. var. brachypodii Sacc., leaf spot. On S. viridula in Minn. and S.Dak.

Balansia hypoxylon (Pk.) Atk., black choke. On S. leucotricha Trin. & Rupr. and S. viridula in Tex.; on S. pulchra Hitchc. in Calif.

Claviceps purpurea (Fr.) Tul., ergot. On S. columbiana Macoun in Ind. and Utah; on S. robusta in Mont.; on S. viridula in Minn. and N.Dak.

Curvularia geniculata (Tracy & Earle) Boed., secondary root rot. On S. comata and S. viridula in N.Dak.

Epichloë typhina (Pers. ex Fr.) Tul., choke. Reported on Stipa sp. without locality.

Fusarium spp., secondary root rot. F. equiseti (Cda.) Sacc. on S. comata, S. sibirica (L.) Lam., S. spartea and S. viridula in N. or S.Dak.; F. oxysporum Schlecht. emend. Snyder & Hansen on the same spp. in N. or S.Dak.; F. scirpi C.R.Lambert & Fautry var. acuminatum (Ell. & Ev.) Wr. on the same spp. in N. or S. Dak.; F. sporotrichioides Sherb. on S. viridula in S.Dak.

Helminthosporium sp., leaf spot. On S. robusta in Ky.; on S. spartea in Minn.; on S. williamsii Scribn. in Wash.

H. sativum Pam. King & Bakke, root rot. On S. comata, S. sibirica, S. spartea and S. viridula in N. or S.Dak.

Pseudomonas coronafaciens (Elliott) Stapp var. atropurpurea (Reddy & Godkin) Stapp, chocolate spot. On S. comata in Mont.

Puccinia graminella (Speg.) Diet. & Holw. (I,III), leaf rust. On S. lepida Hitchc. and S. l. var. andersoni (Vasey) Hitchc. in Calif.

P. graminis Pers. var. tritici Eriks. & Henn. (II,III), stem rust. On S. comata in Wash.; on S. coronata Thurb. and S. pulchra in Calif.

P. interveniens (Pk.) Bethel (III), leaf rust. On S. columbiana in Colo. and Utah; S. comata in Colo., Mont., Wyo.; S. lemmoni (Vasey) Scribn., S. lepida andersoni and S. pulchra in Calif.; S. lettermani Vasey in Colo.; S. speciosa Trin. & Rupr. in Ariz. and Calif. O and I on Malvaceae.

P. monoica (Pk.) Arth. (II,III), leaf rust. On S. elmeri Piper & Brodie in Nev. and S. occidentalis in Calif.

P. scaber (Ell. & Ev.) Barth. (II,III), rust. On S. columbiana in Colo. and Minn.; S. comata in Mont.; S. lettermani in Colo., N. Mex. and Utah; S. occidentalis in Wyo.; S. robusta in Colo., N. Mex. and S.Dak.; S. scribneri Vasey in Colo. and N.Mex.; S. viridula from Minn. to N. Mex. and Mont. O and I unknown.

P. stipae Arth. (II,III), rust. On S. arida Jones in Ariz.; S. californica Merr. & Davy and S. columbiana in Calif.; S. comata from N.Dak. to Ariz. and Wash.; S. mucronata H.B.K. in Calif.; S. neo-mexicana (Thurb.) Vasey in Colo.; S. pulchra in Calif.; S. richardsoni Link in Wyo.; S. spartea from Wis. to Colo. and N.Dak. O and I on Compositae

P. windsoriae Schw. (II,III), rust. On S. comata in Va. O and I on Ptelea trifoliata L.

Pythium arrhenomanes Drechs., root browning. On S. comata, S. spartea, and S. viridula in N.Dak.

Rhizoctonia solani Kuehn, secondary root rot. On S. comata, S. sibirica, S. viridula in N.Dak.

STIPA SPP. cont.

Scolecotrichum graminis Fckl., brown stripe. On S. columbiana in Oreg. & Wash.; S. comata in Oreg. and S. Dak.; S. lettermani and S. occidentalis in Wash.; S. thurberiana Piper in Wash. and Wyo.; S. viridula in Mont.; S. williamsii in Idaho.

Selenophoma donacis (Pass.) Sprague & A.G.Johns., speckle, leaf spot. On S. comata in Mont., and N. & S.Dak.; S. richardsoni in Mont. and Wyo.; S. spartea in N.Dak.; S. viridula in Mont. and N.Dak.

Septoria secalis Prill. & Del. var stipae Sprague, white leaf spot. On S. viridula in Minn. and N. & S.Dak.

S. stipina Died., leaf spot. On S. columbiana in Oreg.

Sorosporium granulosum Ell. & Tracy, inflorescence smut. On S. comata in Colo., Mont., Nebr. and Wyo.; S. viridula in Colo.; Stipa sp. in Oreg.

Stagonospora sp., leaf blotch. On S. viridula in N.Dak.

Tilletia wilcoxiana Griff., seed smut. On S. lepida var. andersoni in Calif.

Urocystis granulosa Clint., spikelet smut. On S. comata in Idaho.

Ustilago hypodytes (Schlecht.) Fr., stem smut. The stem smuts of Stipa spp. have recently been revised by Fischer & Hirschhorn. This sp. is designated a nomen dubium and collections previously referred to it are assigned to the spp. listed below. As a number of records still remain under the former name they are listed here pending re-examination. On S. avenacea L. in Ill.; S. columbiana in Colo. and Oreg.; S. elmeri in Calif. and Nev.; S. eminens Cav. in Calif.; S. lemmoni in Calif.; S. mucronata in Calif. and Tex.

U. jacksonii Zundel & Dunlap. On S. lettermani in Colo. and Utah.

U. minima Arth. On S. comata in Calif. and Mont.; S. neo-mexicana in Ariz.; S. scribneri in Colo.; S. spartea in Ill., Iowa, S. Dak.

U. nummularia Speg. On S. comata in Calif., Mont., Okla., Oreg., S. Dak., Wash., Wyo.; S. neo-mexicana in N.Mex.

U. spegazzinii Hirsch. On S. leucotricha in Tex.; S. robusta in N. Mex.; S. spartea in Ill., Iowa, Wis.; S. viridula in Mont., N. and S.Dak.

U. s. var. agrestis G.W.Fisch. & Hirsch. On S. occidentalis and S. pulchra in Calif.; on S. spartea in Ill.; S. viridula in N.Dak.

U. williamsii (Griff.) Lavrov. On S. californica and S. cernua Stebbins & Love in Calif.; S. comata in Mont. and Oreg.; S. coronata in Calif.; S. lettermani in Wyo.; S. occidentalis in Calif. and Oreg.; S. richardsoni in Mont. & Wyo.; S. speciosa in Calif.; S. thurberiana in Oreg. and Wash.; S. viridula in Mont.

Wojnowicia graminis (McAlp.) Sacc. & D.Sacc., on culms. Minn.

Bends -- cause unknown. On S. lettermani in Wash.

TRICHACHNE (GRAMINEAE)

TRICHACHNE CALIFORNICA (Benth.) Chase, COTTONTOP (1). Perennial of

TRICHACHNE cont.

dry plains in the Southwest; of minor forage value and furnishes food for wildlife. T. INSULARIS (L.) Nees, SOURGRASS (2) inhabits low waste ground in the Southeastern States and West Indies. T. PATENS Swallen (3), occurring in Tex., is similar to (1).

Phyllachora insularis Chardon, tar spot. Tex. (3), P.R. (2).
Puccinia atra Diet. & Holw. (II,III), rust. N.Mex., Tex. (1); P.R. (2). O and I unknown.
P. substriata Ell. & Barth. (II,III), rust. P.R. (2). O and I on Solanum spp.
Sphacelotheca cordobensis (Speg.) Jacks., inflorescence smut. Ariz. (1); P.R. (2).

Mosaic -- ? Marmor sacchari Holmes (Saccharum virus 1 K.M.Sm.). Hawaii

TRICHOLAENA (GRAMINEAE)

TRICHOLAENA ROSEA Nees, NATAL GRASS. Annual of South Africa, cult. for hay in Fla. and naturalized in prairies and open woods near the coast from Fla. to Tex. and in the dryer parts of tropical America; also grown in grass nurseries.

Cerebella andropogonis Ces., on inflorescences, probably secondary to ergot (Claviceps purpurea (Fr.) Tul.) but the latter not yet reported on this host in the U.S. Fla.
Heterodera marioni (Cornu) Goodey, rootknot. Hawaii
Phyllosticta sorghina Sacc., leaf spot. Wash.

TRIODIA (GRAMINEAE)

TRIODIA FLAVA (L.) Smyth, PURPLETOP. Perennial of old fields and open woods, ranging from Mass. to Fla., Tex. and Nebr.; furnishes food for wildlife. Other spp. are of minor forage value.

Colletotrichum graminicolum (Ces.) G.W.Wils., anthracnose. Ala.
Mycosphaerella crus-galli (Ell. & Kell.) Lindau, on dead leaves. N.Y.
Phyllachora eragrostidis Chardon, tar spot. Ga., Tex. Also on T. albescens Vasey in Tex.
Puccinia graminis Pers. (II,III), stem rust. Ala.
P. simulans (Pk.) Barth. (II,III), rust. On T. stricta (Nutt.) Benth. in Tex. O and I unknown.
P. windsoriae Schw. (II,III), rust. N.J. to Ala., Tex. and N.Dak. O and I on Ptelea trifoliata L.
Stagonospora paspali Atk., leaf spot. Va.
Ustilago tricuspidis Ell. & Gall., seed smut. Mo., W.Va. U. hieronymi Schroet. is reported on T. pulchella H.B.K. in Ariz. and N.Mex.

TRIPLASIS (GRAMINEAE)

TRIPLASIS AMERICANA Beauv., PERENNIAL SANDGRASS (1), inhabits sandy soil on the southeast Coastal Plain. T. PURPUREA (Walt.) Chapm., PURPLE S. (2), an annual, occurs in sandy areas throughout the East and Mid-west. Both spp.are of food value to wildlife and are useful soil-binders.

Puccinia schedonnardi Ell. & Barth. (II,III), leaf rust. Kans., Okla., Tex. (2). O and I on Malvaceae.
Ustilago triplasidis Ell. & Ev., inflorescence smut. Fla., Miss., S.Car. (1).
U. sieglingiae Ricker, inflorescence smut. Fla., Ill., Iowa, N. Car. (2).

TRIPSACUM (GRAMINEAE)

TRIPSACUM DACTYLOIDES L., EASTERN GAMAGRASS (1). Tall perennial, occasional in meadows and moist habitats from Mass. to Fla., Tex., Nebr. and Mich.; of minor forage value and furnishes food for wildlife. T. LATIFOLIUM Hitchc. and T. LAXUM Nash, perennial forage grasses of Central America, have been grown in grass nurseries in the U.S.

Bacterium stewartii E.F.Sm., bacterial wilt. Tex., Va.
Claviceps purpurea (Fr.) Tul., ergot. Okla.
C. tripsaci F.L.Stevens & J.G.Hall, ergot. Md., Ga., Miss., N.Car., Va.
Colletotrichum graminicolum (Ces.) G.W.Wils., anthracnose. N.Y., S. Car., Va.
Puccinia polysora Underw. (II,III), rust. Ala., Fla., N.J., N.Car., Tex., Va.; also on T. latifolium and T. laxum in Va. O and I unknown.
P. tripsaci Diet. & Holw. (II,III), rust. Ind., Kans., Md., Miss., Mo., Nebr., N.Car., Tex. O and I on Ceanothus spp.
Ramularia carniformis (Ell. & Tracy) Sherb., on spikelets. Miss.

TRISETUM (GRAMINEAE)

TRISETUM SPICATUM (L.) Richt., SPIKE TRISETUM (1). Perennial of arctic plains and mountain meadows, occurring in the Northeast from Me. to N.Car. at high altitudes, in the upper Lakes States, and in the West from the Rocky Mts. to the Pacific Coast; of significant forage value and furnishes food for wildlife. T. CANESCENS Buckl. (2) and T. CERNUUM Trin. (3) occur in similar habitats in the Pacific Northwest; T. FLAVESCENS (L.) Beauv. (4), introduced from Europe, occurs in waste ground in a range similar to (1).

Colletotrichum graminicolum (Ces.) G.W.Wils., anthracnose. Oreg. (3); Mich. (4).
Hendersonia culmicola Sacc., on stems. Mont. (1).

TRISETUM cont.

Mastigosporium rubricosum (Dearn. & Barth.) Sprague, red eye-spot. Oreg. (3)

Mycosphaerella tulasnei Jancz., leaf mold. Wash. (2).

Puccinia coronata Cda. (II,III), crown rust. Colo. (1); Oreg. (2,3); Calif., Wash. (3).

P. glumarum (Schm.) Eriks. & Henn. (II,III), stripe rust. Wash. (3)

P. graminis Pers. (II,III), stem rust. Calif., Ida., Mont., Oreg. (2). Var. avenae Eriks. & Henn. identified.

P. monoica (Pk.) Arth. (II,III), rust. Colo., Utah, Wash. (1). O and I on Cruciferae

P. poae-sudeticae (West.) Jørst. (II,III), leaf rust. Nev. (1). O and I unknown.

P. rubigo-vera (DC.) Wint. (II,III), leaf rust. Calif., Colo., Wash., Wyo. (1). Reported as var. agropyri (Eriks.) Arth. in Colo.

Scolecotrichum graminis Fckl., brown stripe. Ida., Mont. (2); N.Y. (4).

Selenophoma donacis (Pass.) Sprague & A.G.Johns., leaf and stem speckle. Mont., Wyo. (1).

Septoria calamagrostidis (Lib.) Sacc., leaf spot. Oreg. (2,3).

DIVISION OF MYCOLOGY AND DISEASE SURVEY

CEREAL DISEASES IN DELAWARE AND MARYLAND IN 1945

A. J. Mix

During the period between May 5 and June 15 a survey was made of the occurrence of cereal diseases in Delaware, and in the counties of Cecil, Kent, Queen Anne, Caroline, Talbot, Wicomico, Harford, Baltimore, Carroll, Frederick, Howard, Montgomery, Anne Arundel, and Prince Georges in Maryland. Several of the trips were made in the company of Dr. David Gottlieb, Department of Plant Pathology, Delaware Agricultural Experiment Station.

The survey was made at intervals because of interruption by other work and it was not possible to revisit some of the areas seen earliest. However, the larger part of the survey was conducted between mid-May and early June, and by visiting the sourthernmost areas first it was possible to see most fields of barley, wheat, and rye in the period between blossoming and the beginning of ripening.

Considerable acreages of barley, wheat, and rye were found. Oat fields were few and scattered.

Wheat. Leaf Rust (Puccinia rubigo-vera var. tritici) was found to be widespread and severe in early May, and increased throughout the season. In estimating damage it was unnecessary to consider prevalence, since except in the very early part of the period, all plants in all fields had rust pustules (uredial stage). Severity was estimated on an arbitrary scale of values from 1 to 5, the first representing a few scattered pustules on each leaf blade and the fifth category being reserved for a condition in which the leaf blade was closely crowded with pustules and it seemed that the maximum possible leaf-area was occupied by them. No measurements or counts were made but sufficient time was spent in each

field to assure that the index-figure decided upon was reasonably accurate.

At first some attention was paid to varieties, but no variety appeared at all resistant, and usually adjacent fields of different varieties showed the same degree of severity. Severity increased with vigor and closeness of stand, and also increased, in general, from north to south as will be seen from the accompanying table.

County	Acres examined (approximately)	Index[a] of severity of leaf rust
Delaware		
New Castle	250	2.5
Kent	220	3.0
Sussex	100	2.5
Maryland		
Cecil	240	2.0
Kent	100	3.0
Queen Anne	375	3.5
Talbot	100	3.0
Maryland		
Wicomico	250	3.0
Harford	100	1.5
Baltimore	150	2.5
Carroll	100	3.0
Frederick	100	2.5
Howard	200	3.5
Montgomery	250	4.0
Anne Arundel	30	4.0
Prince Georges	100	4.0

[a] Index figures in this table were arrived at by averaging all indices recorded for the fields visited and adjusting the resulting figure to the nearest 5/10.

The western part of Queen Anne County, close to Chesapeake Bay, was the area of greatest severity.

Powdery Mildew (Erysiphe graminis var. tritici) was especially noticeable in the early and middle part of May. Many fields were seen which would have been rated 3 or 4 on a scale comparable to that used for leaf rust. Infection was especially heavy in parts of Queen Anne, Talbot, and Caroline Counties, Maryland, and in Kent County, Delaware. Severity of attack was directly related to vigor and thickness of stand. Younger as well as older leaves were infected. Perithecia were found on middle and lower leaves on May 5, and mature perithecia a week later. Weather had been cool with frequent rains and plants had often remained wet during the night. Mildew was less noticeable near the ripening period, but no field was seen during the season in which it was not present to some degree.

Loose Smut (Ustilago tritici) was present, if only in trace amounts, in all fields of headed wheat examined. Usually 1 or 2% of the plants in a field were smutted, but in a few fields the amount reached 5%, and in one field (Wicomico County, Maryland) 10%.

Bunt (Tilletia foetida) was not seen until June 15, when 2 fields, south of Church Hill, Maryland, were found, one with 10% bunt and the other with 5%. Bunt was also present in less than 1% amount in one field in Prince Georges County on June 16.

Scab (Gibberella zeae) also was not encountered until late. It was seen on June 15 in several fields in Queen Anne County and the following day in a few fields in Prince Georges County. The amount was moderate.

Stem Rust (Puccinia graminis var. tritici) was observed only in a few fields on the same dates and in the same localities as scab. A few uredia were present on middle leaf-sheaths. It is probable that stem rust and perhaps scab might have been found in other areas at this late date, but stem rust was clearly of no consequence in Delaware and Maryland this year.

No identifiable Helminthosporium spots were found on wheat.

Glume Blotch (Septoria nodorum, identified by Dr. L. S. Olive) was abundant in many almost mature fields seen in the last few days of the survey. The area covered during these few days included parts of Queen Anne, Anne Arundel, Prince Georges, and Montgomery Counties.

A peculiar trouble, which might for convenience be called "Leaf Drop", was seen first in Cecil and Harford Counties, Maryland, on May 29, by Dr. Gottlieb and the writer. Usually only the uppermost leaf on a plant, occasionally the one immediately below, was affected. A broken or weakened place occurred on the leaf sheath just below the juncture of sheath and blade, and the blade hung straight down. Insect injury was at first suspected and may possibly be the cause; however, microscopic examination of affected leaf sheaths showed bacteria oozing in quantity from the leaf tissues. Sometimes a yellowish or reddish discoloration of the leaf blade was evident, but bacteria could not be found in the blades except near the juncture of blade and sheath, and similarly discolored leaf blades were observed that did not "drop".

After leaf drop was first seen it was found in every field visited in Maryland. This means it is known to have been present in all the counties mentioned above except Wicomico which was not revisited. Special trips were made through Delaware on June 5 and 14 looking for leaf drop. It was found to be common in northern New Castle County, present in the few fields revisited in Sussex County, and comparatively rare in Kent County.

Economically this trouble must be of almost no consequence.

Barley. Leaf Rust (Puccinia anomala) was widespread and severe. Prevalence was 100% in all fields. In Maryland, greatest severity was observed in Wicomico County (severity of 4, using the method described for leaf rust of wheat), and Caroline County (severity of 3). Other Maryland counties when rated for severity by this method, and Delaware, received ratings of 1.5 or 2. Again there was no significant difference between varieties.

Powdery Mildew (Erysiphe graminis var. hordei) was present to about the same degree as on wheat, and the center of greatest severity was the same, from eastern Talbot County, Maryland, to middle Kent County, Delaware.

Loose Smut (Ustilago nuda) and Covered Smut (U. hordei) were common throughout the area. The same number of fields (18) and approximately the same acreage (170 to 200 acres) were observed for each of the following categories: (a) no smut or a trace; (b) loose smut; (c) covered smut. In a few fields both smuts were found. Occasionally loose smut was present in amounts of 1 or 2%, but usually amounted to 5%, and sometimes to 10%. Covered smut was more abundant, commonly affecting 5% of the plants in a field and in a few fields rising to 15 and even 20%. The most heavily infected field was in Queen Anne County, Maryland. Av-

erage amounts of smuts for different barley varieties are as follows: Virginia Hooded, loose smut 0, covered smut 4%; Wong, loose smut 3.5%, covered smut 0; Kentucky No. 1 and Tennessee Winter (not distinguished), loose smut 1.3%, covered smut 3.5%. Fields with no smut were included in reaching these averages.

Barley Scald (Rhynchosporium secalis) was found severely attacking the variety Wong in a field near Middletown, Delaware. An adjacent field of the variety Monobarle was entirely free. Scald was also found, but in less amount, in a field south of Chestertown, Maryland. Again the variety was Wong. The disease was not seen elsewhere, but Dr. E. A. Walker reports (in correspondence) having found it, on the Wong variety only, in Frederick County and in several fields on the Eastern Shore.

Barley Stripe (Helminthosporium gramineum) and Spot Blotch (H. sativum) were found in a few fields in Central Delaware and on the Eastern Shore, but were of little consequence.

Rye. Although the rye acreage in the area is considerable, only 13 widely scattered fields, containing approximately 150 acres, were visited. Leaf Rust (Puccinia rubigo-vera var. secalis), while prevalent, was moderate as to severity, and Powdery Mildew (Erysiphe graminis var. secalis), also prevalent, was light. No other diseases of rye were found.

Oats. Only 12 fields, with about 100 acres, of oats were found. These were widely scattered, occurring in Kent and Sussex Counties, Delaware, and Howard, Queen Anne, Talbot, Wicomico, and Prince Georges Counties, Maryland. Crown Rust (Puccinia coronata) was either absent or present in trace amounts. Leaf Blotch (Helminthosporium avenae) was found in 9 fields (70 acres). Infection was heavy, especially so in one field between Milton and Harbeson, Delaware. Loose Smut (Ustilago avenae) was found in 6 fields (60 acres), and Covered Smut (U. kolleri) in 2 fields (15 acres). About 2% of the plants were smutted in these fields.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

CEREAL DISEASE SURVEY IN KENTUCKY

L. M. Josephson

A survey of the small grain crops in the State was made during the week May 28-June 1 with Mr. William C. Johnstone, of the Extension Service, Kentucky College of Agriculture, and the county agents in the respective counties surveyed. The survey was made in the central part of the State, the principal wheat-growing area of Southern Kentucky, the western tier of counties along the Ohio River, and the territory from Louisville to Lexington. The counties surveyed were Mercer, Marion, Warren, Simpson, Logan, Todd, Christian, Trigg, Caldwell, Crittenden, Union, Henderson, Daviess, Breckinridge, and Shelby. Supplemental surveys were made the previous week and the week of June 4 in the vicinity of Lexington in Fayette, Scott, Woodford, Jessamine, Madison, Clark, and Bourbon Counties.

Wheat. Approximately 1200 acres of wheat were surveyed. Fifty-

four percent of the acreage surveyed was of the Thorne variety, 13% Currell's, while the remaining acreage was of less common varieties and general mixtures. Two fields each of Valprize and Clarkan comprising 160 acres and 90 acres, respectively, were observed. Two fields comprising 70 acres were planted to a variety locally known as Russian Red. Apparently this is a misnomer, for the wheat in both fields was bearded. Early spring growth was very poor due to the cold, wet weather during April. Warm weather during March advanced the wheat about 3 weeks ahead of normal until retarded during April. Frosts during April in Central Kentucky did some damage.

Hessian fly damage was prevalent in all fields surveyed but was very severe in Logan, Todd, and Christian Counties in Southern Kentucky. Of the total acreage surveyed in these counties there was an average loss of 22%. From an extensive survey made in Logan County by County Agent John Watlington it is estimated that over 30% of the acreage has either been plowed under or abandoned. In all cases the infestations were most severe in fields planted after November 1, the infestations resulting from an early spring brood brought on by the warm weather in March. Damage from a second spring brood also occurred.

A very severe epiphytotic of leaf rust occurred in South-central and Southern Kentucky. Fifty percent of the acreage observed showed 100% severity on the top leaves, while the remaining acreage was infected to the extent of 50% severity or more. Most of the wheat was in the flowering stage, and many fields had no green leaves remaining. In some fields the leaves were completely dead. The Valprize and Clarkan varieties were somewhat later and were less severely infected. However, a report on the Valprize variety 10 days later stated that rust developed rapidly and that all leaves were killed. It is estimated that leaf rust alone in some fields will reduce the yield as much as 50%, and the quality will be greatly impaired. In the territory along the Ohio River and in the Central Bluegrass the rust was later in developing, and the damage will not be so extensive.

In only one field was stem rust found in any great amount. Loose smut was found in 71% of the fields. The average was 2.9%; the range was 0 to 15%. Powdery mildew was found to be prevalent on the lower leaves in practically all the fields, but apparently the damage was slight. A trace of scab was found in 10% of the fields. Glume blotch was noted in 20% of the fields. Speckled leaf blotch (Septoria tritici) and Helminthosporium leaf spot were noted in small amounts.

Barley. Approximately 300 acres of barley were surveyed. Over 60% of the fields were of the Kentucky No. 1 variety, with Missouri Early Beardless making up the bulk of the remaining acreage. A few small fields of the Wong variety were being grown for the first time. Some fields of Missouri Early Beardless had already been harvested at the time of the survey. The barley received an early start during the warm weather in March but was retarded considerably during the cold, wet weather in April. Some damage was done by late frosts in Central Kentucky. In general the barley crop is good and should make good yields of high quality grain.

Hessian fly was prevalent in 30% of the fields and had caused approximately 40% damage in one field.

Powdery mildew was found in all fields, causing damage in 1/3 of the fields. The greatest damage from this disease was found in Central Kentucky.

Loose smut (Ustilago nuda) occurred in 50% of the fields. The average was 1.2% with a range of 0 to 5%. Covered smut occurred in 22% of the fields. The average was 2.3%, with a range of 0 to 15%. Only a trace of the intermediate loose smut was observed.

Net blotch (Helminthosporium teres) was severe in over 60% of the fields. In some fields the leaves were nearly all dead, and the barley was still in the soft dough stage.

The Wong variety grown in Christian County was infected with anthracnose. (Colletotrichum graminicolum).

Head blights were observed in all fields surveyed. In half of the fields an average of 40% of the heads were infected to the extent of from 1 to 5 spikelets per head.

Scab was present in 20% of the fields.

Leaf rust was observed in 78% of the fields. In only 2 fields was the infection recorded as severe.

No stem rust was observed.

Oats. Only a few fields of fall-sown oats were observed, and no spring-sown oats were surveyed. Very little winterkilling had occurred. Crown rust infection was very heavy in Southern Kentucky, with one field of Fulwin recorded as 80% severity. Only a trace of stem rust was observed. Helminthosporium leaf spot occurred in all fields. One field of Winter Turf oats had 15% loose smut.

Rye. One hundred ten acres of rye were examined. A considerable amount of head blasting, apparently due to the cold, wet weather during the pollinating period, was observed. One field was observed to have 18% blasted heads. The trouble appeared to be more prevalent in fields that were grazed heavily and late in the season. All the fields observed had an average severity of 54% leaf rust but apparently it was doing little damage. Only traces of ergot (Claviceps purpurea) and of anthracnose were observed.

KENTUCKY AGRICULTURAL EXPERIMENT STATION

CEREAL DISEASES IN WISCONSIN

Edwin E. Honey, J. G. Dickson, F. R. Jones, and J. L. Allison

Between June 5 and 20, inspections of cereals and forage crops were made in the southeastern, central, north-central, and eastern parts of Wisconsin by the authors either separately or variously grouped, as opportunity permitted.

Prior to May 20, cold dry weather with nightly frosts characterized the central and northern areas of the State; whereas, in southern portions especially, rainfall was too great for normal spring planting. Cool weather with rains (excessive especially in the southern areas) continued throughout the last of May and the first half of June. Frost damage was found widely scattered during late May and the first week of June.

Small grains appeared to be above average in condition; whereas corn was slow and poor in color, and needed warm weather to bring it along. Because of the low temperature and heavy rainfall, an estimated 50% of the corn had not been planted by June 8. In general, notwithstanding the rains, little water damage was apparent on planted crops, although some was observed in a few local areas.

Oats. There has been an increase in oat acreage over last year. Notwithstanding the abnormal cold and rain this spring, this small grain is in above-average condition. The variety Vicland is grown almost exclusively. Most oats examined were in the early tillering stage, but at the close of the period some were in the late tillering or early culm elongation stage.

Inspections of oat fields were made in the following Counties: Iowa, Green, Rock, Dane, Columbia, Marquette, Waushara, Portage, Langlade, Waupaca, Wood, Fond du Lac, Sheboygan, Manitowoc, Brown and Kewaunee.

Helminthosporium Leaf Blotch appears to be increasing somewhat in Wisconsin. It was found to be generally abundant in the southern counties of Iowa, Green, and Rock. It was also abundant in the eastern counties near Lake Michigan, such as Brown, Kewaunee, Fond du Lac, Manitowoc, and Sheboygan. In all other counties visited the leaf blotch was generally distributed in from slight to moderate amounts. The perfect stage (Pyrenophora avenae) was collected on old stubble or straw in a number of counties. As pointed out last year (PDR 28 (20): 647. July 7, 1944), it would appear that a simple dust treatment of oats would be worthwhile to prevent the increase of this disease.

Halo Blight (Pseudomonas coronafaciens), while not so abundant as Helminthosporium leaf blotch, in contrast to last year was quite generally distributed in from traces to slight amounts. It appeared to be less common in Marquette, Waushara, Marathon, and Langlade Counties. The weather this spring has probably favored development of this disease. A seed treatment, as suggested for leaf blotch, would also help in the control of halo blight.

Bacterial Stripe (Phytomonas [Pseudomonas] striafaciens) was recorded only in Iowa County, in small amounts.

Crown Rust was not observed during this period. However, examination of the same hedges of Rhamnus cathartica in Rock County reported last year (PDR 28 (20): 648. July 7, 1944), revealed a great abundance of infection on this alternate host. Inspection later in the season will be necessary to determine the effect of this disease on oat varieties grown in this area.

Barley. There appears to be an increased barley acreage in Wisconsin this year. The crop was in the early tillering stage at the time of examination. Fields were examined in Rock, Dodge, Manitowoc, and Brown Counties.

Helminthosporium Spot Blotch, Seedling Blight, and Root Rot (H. sativum) was observed as a trace only, on Oderbrucker in Dodge County, Pedigree 38 in Brown County, and Manchurian in Manitowoc County. The disease was not observed in Rock County and appears to be less severe than was found to be the case last year (PDR 28 (20): 646-647. July 7, 1944).

Net Blotch (Pyrenophora teres) was not observed in Rock County, was found in trace amounts on the Oderbrucker variety in Dodge County, and was abundant in one field of Manchurian in Manitowoc County and in fields of Pedigree 38 in Brown County.

Stripe was observed as traces in fields of Oderbrucker in Dodge County only.

Powdery Mildew was found in traces generally distributed in fields of the Oderbrucker variety in Dodge County and in Manchurian barley in Manitowoc County.

Winter Wheat. A few fields of winter wheat were examined in Kewaunee County only. A trace of Loose Smut and a trace of Leaf Rust were observed.

Aecia of Puccinia rubigo-vera on the tall meadow rue, Thalictrum polygamum, were observed in Green, Rock, Marquette and Portage Counties. Aecia were also obtained on Isopyrum biternatum in Marathon County.

EMERGENCY PLANT DISEASE PREVENTION PROJECT;
UNIVERSITY OF WISCONSIN;
DIVISION OF FORAGE CROPS AND DISEASES

DISEASES OF SMALL GRAINS IN SOUTHERN MINNESOTA AND SOUTH DAKOTA

Ian W. Tervet

From June 5 to June 14, a survey of cereals and forage crops was made. The continued cold weather in May and early June has retarded normal development in all field crops, while corn has suffered appreciably from the unseasonable weather.

The area covered included the winter wheat section in Southeast Minnesota, the large winter wheat section adjacent to Chamberlain in South Dakota, and the northern spring wheat section from Mobridge, South Dakota eastward.

Wheat. Southeastern Minnesota. Leaf rust continues to develop; every field of both winter and spring wheat examined was infected to some degree. In Southeastern Minnesota, leaf rust has not developed rapidly during the 5 weeks following its first appearance this year, but the warmer weather of early June will permit more rapid development. On June 5, 6, and 7 winter wheat in Southeastern Minnesota was 100% infected, but the average severity, on the basis of matured pustules, did not exceed 5%. However, all leaves, with the exception of the flag leaf, had many chlorotic spots, indicative of an infection rating much in excess of 5%. Practically all winter wheat in this section was approaching the boot stage.

Western Minnesota. Spring wheat varied in development from seedling to jointing stages. Leaf rust was present in all fields, 100% of the plants being infected while the severity varied depending on the stage of the plants.

South Dakota. Heaviest infection of leaf rust on winter wheat was found in fields adjacent to the Missouri River in Brule and eastern

Lyman Counties. Mr. T. W. Strachan, county agent of Lyman County, accompanied the writer during the survey in that county. Heavy rains during early June had made most roads impassable, thereby limiting the survey considerably. A sufficient number of fields were observed to indicate that leaf rust will be heavy before the crop matures. Growth in most fields was rank, and with little winter-kill and very heavy stooling during May, conditions are favorable for substantial loss, not only from leaf rust but also from stem rust should sufficient inoculum of the latter be present within the next few weeks. In western Lyman County, near-drought conditions in April and May made winter wheat less rank, and leaf rust was not so abundant in this drier section. Leaf rust prevalence at Vivian in western Lyman County was 50% and severity a trace on June 10. Winter wheat was mostly in boot, with one field heading.

Spring wheat in Central South Dakota varied greatly in stage of development; some fields in the area between Mobridge and Aberdeen still being in the seedling stage while a few fields in Lyman County were approaching the boot stage. Stands of spring wheat were good, little seedling disease being seen. Leaf rust was found as far west and north as Isabel in Dewey County, and occurred in every field seen from there eastward.

At Brookings W. F. Buchholtz and the writer examined the wheat uniform nursery plots on June 9. All bread wheats, including Newthatch, Rival, Pilot, Hope, were infected. On June 12, a wheat variety demonstration plot in Grant County north of Watertown was examined. Pilot, Mida, and Rival were infected 100%, and numerous susceptible type pustules occurred on the oldest leaves. Three durums, Stewart, Carlton, and Mindum, also were uniformly infected but pustules were of the resistant type. From the examination of the wheat test plantings at Brookings and in Grant County, it appears probable that leaf rust races capable of attacking the newer "leaf-rust-resistant" wheats are present and that there is little probability of Newthatch, Rival, and Pilot escaping severe infection from leaf rust this year.

The only other disease generally evident on wheat was speckled leaf blotch. This disease occurred in all winter wheat fields seen in Minnesota and South Dakota, and in most fields had killed a number of the older leaves. The disease was found in many fields of spring wheat, but little foliage killing had resulted.

Oats. In Southern Minnesota and Eastern South Dakota, oats are developing very slowly. Crown rust was not seen in any field. Buckthorn in Southeastern Minnesota showed fully opened aecia by June 7, but at Brookings, South Dakota, aecia had not opened by June 9. In 1944, aecia at Brookings had opened by May 29, so that there is about a 10-day lag this year. Oats also are delayed this year so that there is relatively little difference in earliness of crown rust development between 1944 and 1945. Leaf spots were common on oats, Helminthosporium avenae being prominent in Eastern Minnesota, while halo blight was more common westwards.

Barley. Very little barley is now grown in Southern Minnesota and the most concentrated acreage seen was in North-central South Dakota. Stands of barley were good.

Rye. The rye crop at heading is in good condition; very little leaf rust was seen. Leaf spot (Septoria secalis) was common but not injurious.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

CEREAL DISEASES IN NEBRASKA

C. M. Slagg

Wheat Diseases. During the week ending June 16, 98 wheat fields in 23 central, southwestern, and western counties were surveyed.

A trace of black stem rust was seen in one field in Lancaster County and in one field in Seward County on June 12. The previous week stem rust had been seen for the first time in 1945, in Nuckolls County on June 7.

Many Southeastern Nebraska wheat fields show scab on scattered heads. Damage as yet is slight.

Take-all foot rot (Ophiobolus graminis) is also present and causing considerable loss in many fields. The "white heads" stage is prominent this year.

Black chaff (Phytomonas translucens var. undulosa) [Xanthomonas translucens f. sp. undulosa] is also present and causing light damage in many fields.

A foot rot of the Helminthosporium type was present in a number of southwestern wheat fields. It attacked scattered stools in the field, and was particularly prevalent in Red Willow County.

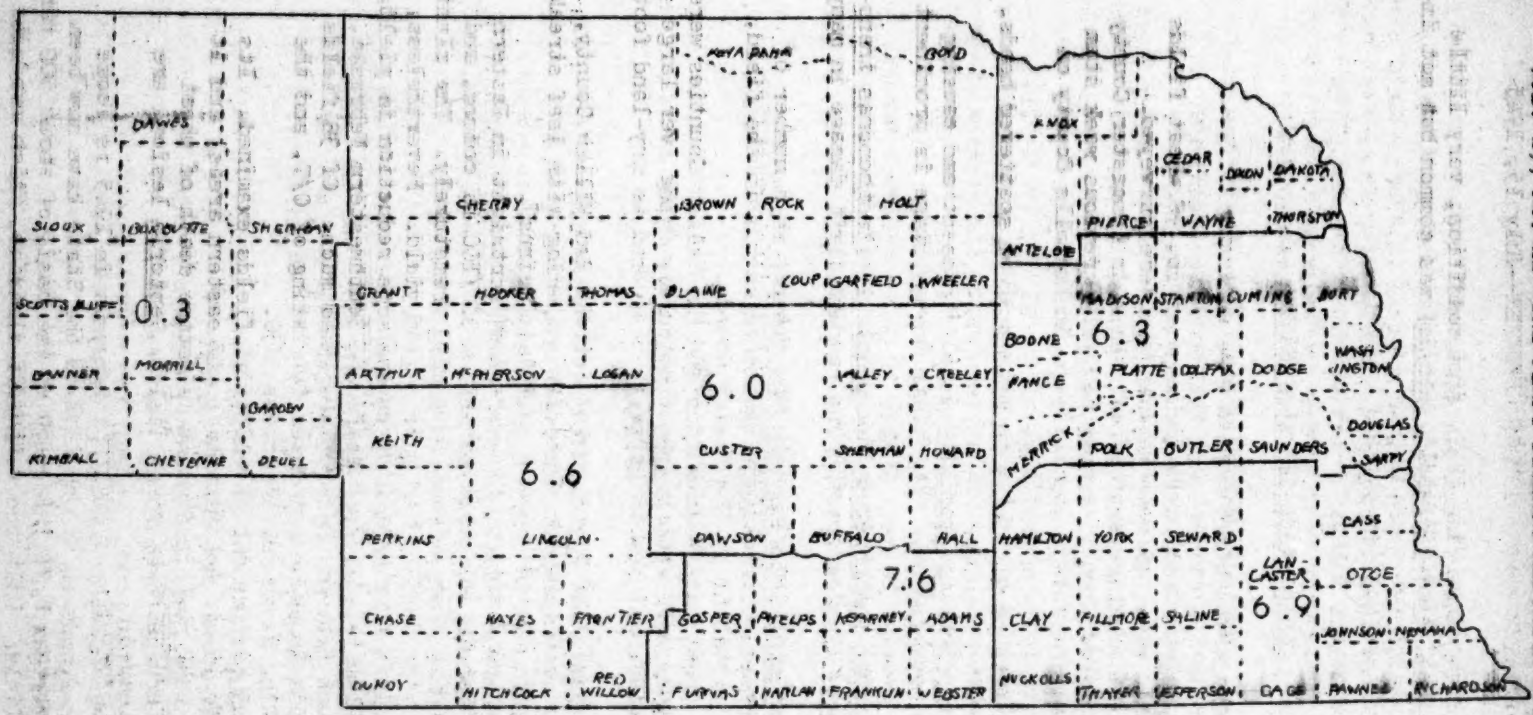
A number of upland wheat fields in Furnas and Red Willow Counties were seen in which the stools were stunted and prematurely dying over large areas of affected fields. It was tentatively diagnosed as dry-land foot rot.

In several fertile fields of river bottom soil in Red Willow County, scattered stools show stunting and excessive tillering with leaf streaking and distortion. This was diagnosed as mosaic [virus].

Leaf rust has increased greatly during the last fortnight in Eastern Nebraska. In this area an infection rating of 100/100 is common, and all the leaves, including flag leaves, have died prematurely. The plants are well headed, and seem destined to make a good yield. Nevertheless, it seems certain the leaf rust must have caused some reduction in yield, but the amount is problematical. In Western and Southwestern Nebraska, the leaf rust, although present, has not increased much. Of 38 fields examined in these areas 23 showed an infection rating of 0/T, and the highest infection rating given any field was 5/30.

Speckled leaf blotch was present in all wheat fields examined. Its attack was most severe in the south-central and eastern areas, and it combined with orange leaf rust in causing premature death of wheat leaves. In most Eastern Nebraska wheat fields, Septoria lesions are present on the flag leaves.

The most destructive disease of wheat in Nebraska in 1945 is loose smut. A total of 257 fields in 47 counties in the State have now been examined, and have averaged 6.5% infection on the basis of about 500 random head counts per field. Only the northwest district, which produces



Percent infection by districts.

Average infection in 257 fields in 47 counties was 6.5%.

Loose Smut of Wheat in Nebraska, 1945

about 1/4 to 1/3 of the wheat crop, was relatively free of loose smut; 21 fields in 5 counties in this district showed an average infection of but 0.3%. All other districts were rather uniform in average infection, although there were wide local variations, particularly in eastern districts where the Pawnee and Kawvale varieties were frequently encountered, and were always smut-free. The average percentage of infection by districts with loose smut of wheat is shown on the accompanying map.

Barley Diseases. During the week ending June 16, 29 fields of barley were examined in the central and southwestern districts. Of these, 9 were winter barley and 20 fields were spring-sown.

Covered smut was the worst disease seen in winter barley, but caused only a trace of loss in spring-sown barley. Loose smut was more damaging in spring-sown fields than in winter barley. Of the 9 winter barley fields examined 4 were free from covered smut and had apparently been treated. The other 5 fields showed loss of 24, 11, 9, 19, and 11%, respectively, from covered smut. All 9 fields had loose smut, the average loss being 3.7% in winter barley. In spring barley the average loss was 10.8% from loose smut, from covered smut only a trace. For all barley fields examined, the average loss from these 2 smuts was 11.1%.

Barley stripe was present in many fields in Southwestern Nebraska, in several cases being very plentiful on the heads, and it was estimated to have caused at least 5% loss in 3 fields in Hitchcock and Red Willow Counties.

Bacterial blight of barley (Phytomonas [Xanthomonas] translucens) was diagnosed in several central and southwestern fields, but damage was slight.

Powdery mildew was seen in a number of fields in both the central and southwestern districts, particularly where leaf growth was rank, but it is not believed to have caused much injury.

During the week ending June 23, 32 fields of spring barley were examined in the central, north-central, northeastern, and eastern districts. The principal diseases seen in order of importance were loose smut, covered smut, stripe, intermediate covered smut (Ustilago nigra), and scab. For the area covered the average loss from loose smut was 10.6%, from covered smut 1.8%. Other diseases caused less than 0.5% loss.

Diseases of Oats. Halo blight (Phytomonas [Pseudomonas] coronafaciens) was present and caused some damage in every oat field examined during the week ending June 16, in central and southwestern districts. Loose smut caused an average of 2.5% loss in 6 fields in the southwestern district.

During the week ending June 23, 29 fields were examined in central, north-central, northeastern, and eastern districts. Smut (believed to be caused by Ustilago kolleri) was the only disease causing easily measurable losses, although halo blight was present in every field, and stem rust (Puccinia graminis var. avenae) was seen in a majority of the fields, being worst in the more southerly areas. The average loss from smut in the fields examined was 1.1%.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

CEREAL DISEASES IN KANSAS AT THE BEGINNING OF JUNE

C. O. Johnston

The writer, in company with Prof. L. P. Reitz and Dr. R. H. Painter of the Kansas Agricultural Experiment Station, made an extended trip over the western half of Kansas during the period May 29 to June 1, inclusive. Frequent stops were made for observations of crop, disease, and insect conditions in commercial fields of cereals and visits were made to experiment stations and experimental fields at Hays, Dodge City, Meade, Garden City, Kingman, and Wichita.

The condition of the Kansas winter wheat crop is variable but in general it now is obvious that all crop reports up to May 15 probably were too optimistic. In the west-central part of the State there is a vast acreage that has very poor appearance. Stands seem thin, owing to failure to tiller or to the death of many tillers; the plants lack chlorophyll in the leaves and are irregular in height and in heading; the fields have an irregular, spotty, generally unhealthy appearance; and there are evidences of damage from freezes, diseases, and insects. In the southwestern part of the State, wheat on cropped land will be a failure or near failure due to drought. However, wheat on fallow is good to excellent.

The poor condition of winter wheat in the west-central area reaches its best expression at Hays where there are sharp contrasts in the reaction of varieties to the abnormal conditions. Comanche and several other varieties appear normal. Pawnee is very uneven in height, having about 2/3 of its heads about 12 to 14 inches above ground and the remaining 1/3 near the 3-foot level. Most heads are well filled, however. Tenmarq is the most severely damaged, having extreme irregularity in height and stage of heading. The leaves of Tenmarq and many other wheats are lacking in chlorophyll, with yellowish to whitish striping and mottling very pronounced. Many plants obviously are damaged at the base and the culms spread out on the ground instead of standing erect. Often there is a brownish discoloration of internodes and nodes near the base.

The causes of the above conditions are uncertain but undoubtedly are numerous. To begin with, much wheat was planted very early and made unusually rank growth last fall, much of which was heavily attacked by leaf rust. However, the wheat came through the mild winter in excellent condition and began rapid growth during unusually warm weather in January, February, and March. This rapidly depleted nitrates in the soil and the wheat turned yellow in most fields. This situation was aggravated by unseasonably cold weather during April and May which prevented rapid nitrification. There was considerable actual freezing damage from Hays and Dodge City westward during April and hard frosts during early May were detrimental although not seriously damaging. Added to these difficulties leaf rust, mosaic, take-all, foot rots, and green bugs now are taking a toll in some localities.

The rust situation now is fairly clear. Leaf rust is very heavy on the experiment stations at Manhattan, Hays, Kingman, and Wichita but does not seem heavy in most commercial fields, except in South-central Kansas from Barber to Cowley County and south of the Arkansas River.

Stem rust of wheat was found only as occasional pustules just rupturing the epidermis in Pratt, Kingman, and Sedgwick Counties on June 1. The first pustule of stem rust of wheat from natural infection was found at Manhattan on May 28. Both stem rust and crown rust are beginning on oats in South-central Kansas and stem rust has been found on oats at Manhattan. Both of these diseases can damage the oats in Central Kansas, most of which is late. Leaf rust is very heavy on winter barley in some localities but most fields are clean. The winter barley crop is excellent in the western half of the State and seems not to have been damaged by the conditions that damaged winter wheat. Leaf rust is very abundant on rye and some stem rust of rye was found in Pratt County.

Other diseases that are conspicuous in Kansas this year are loose smut of wheat and smut in barley. Loose smut of wheat can be found in practically every field and reaches at least 5% in some fields. The writer never has seen loose smut so abundant and so widely distributed. Smut is also very heavy in barley, especially in winter barley. It probably is loose smut although many smutted heads resemble covered smut. Take-all spots were observed in some wheat fields in Rush, Pratt, and Harvey Counties but the disease did not seem to be doing much damage in really good fields.

In general, it now seems unlikely that either of the rusts will cause much damage to the Kansas wheat crop except in a narrow band of heavy wheat from north to south across the center of the State where leaf rust is heavy. Leaf rust was present only in very small amounts west of Hays. The crop now is mostly fully headed and its success or failure is in the hands of the weather man from now on.

DIVISION OF CEREAL CROPS AND DISEASES

CEREAL DISEASES IN KANSAS DURING THE MIDDLE OF JUNE

Stuart M. Pady

From June 11 to 15 the central and south-central counties of Kansas were examined for cereal diseases in company with Prof. L. E. Melchers, head of the Department of Botany & Plant Pathology, Kansas State College. The trip covered the area lying between Manhattan, Hays, Dodge City, Winfield, and McPherson. A total of 102 fields in 24 counties was examined.

Wheat. Harvest had already started in a few early wheat fields in the south-central counties adjacent to Oklahoma, but most fields were a week to 2 weeks from harvest. The main points of interest in this survey were the increased amounts of leaf rust, the scattered appearance of stem rust, and the presence of take-all in 8 additional counties.

Leaf rust has increased greatly in the last 2 weeks and in most fields is now practically 100% (USDA scale). In the south-central counties leaf rust has caused the drying up of the flag leaves in fields approaching maturity, while in the north-central counties, the leaves were generally greener. In the Dodge City area where drought effects are still evident, the percentage of leaf rust is considerably less. Rank fields, especially those on fallow ground, are usually more heavily infected than

those in which the stand is thin. An unusual feature of the leaf rust epiphytotic is that there are some pustules on heads and leaf sheaths and occasionally even on the necks, which are now in the telial stage. This has caused some confusion since some observers have mistaken this stage for the black stage of stem rust.

Stem rust was found in trace amounts in 22 fields (22%) in 11 counties. In most of the fields the lesions were primary and were most commonly found on the awns, some on the necks and sheath, and in one case on a leaf. Considerable search was generally required before these single uredosori were found, which would indicate that since stem rust was first reported (in Manhattan May 28 and Southeast Kansas June 1 according to C. O. Johnston) conditions have been unfavorable for its development and spread.

Take-all is much more severe and widespread this year than for several years past. It was observed in 30 fields (29%) in 14 of the central and south-central counties. Its presence in Dickinson, Ford, Pratt, Barber, Reno, Harper, Sumner, and Cowley Counties brings the total number of counties to 18. The severity of infection varied considerably in individual fields from a trace to as high as 30%. Fields on summer fallowed ground had less take-all than those on continuously cropped land. In one field of Tenmarq in Rice County half of the field had been fallowed. The other half had wheat the year before. In the fallowed half take-all was a trace, while in the rest of the field typical dead areas were conspicuous and damage was severe. In some fields the disease is appearing late, causing premature death of scattered plants, as a result of which the plants are short and bleached with a tendency to break over at the first node.

Loose smut was noted in 28 fields, mostly as a trace, but these figures are probably low since the bare rachis is very inconspicuous, especially in the fields approaching maturity.

Bunt (Tilletia foetida) was found in 7 fields in 7 counties, as a trace in 6, but 1% in one field of Tenmarq in Kiowa County.

Because of the heavy leaf rust it was difficult to make readings of speckled leaf blotch except in the north-central counties where the leaves were still green. In these counties Septoria was present on the flag leaves and was a factor along with leaf rust in causing their death. Septoria nodorum was observed on the heads in one field in Rush County.

The bacterial lesions on the flag leaves described in the last report (in June 15 issue PDR), from 10 fields in 6 counties, have been identified by Dr. A. G. Johnson as the foliar symptoms of black chaff. The peduncle and head discolorations which are more typical of this disease were observed in 6 fields in trace amounts. Basal glume rot (Phytomonas [Pseudomonas] atrofaciens) was found on a few heads in 5 fields. The majority of these bacterial infections are in the north-central counties. Scab was observed in 3 fields in Marion, Ellsworth, and Saline Counties.

Oats. Crown rust is the most prevalent disease on oats and was found in all 12 fields examined, with a trace on the top leaves and ranging from a trace to 40% on the lower leaves. Stem rust was a trace in all but one of the fields. Since oats in the central part of the State have only recently headed there is the possibility that both of these rusts may cause considerable damage if conditions are favorable for de-

velopment. Smut (Ustilago sp.) was present in 7 of the fields, ranging in severity from a trace to 40%, and averaging 7%.

Barley. Only a few barley fields were examined but in these smut (Ustilago sp.) was evident (up to 3%), while leaf rust had increased considerably over previous surveys. In one field both uredia and telia were present on the leaf sheaths. A trace of stem rust was found in one field in Pawnee County. In one field of spring barley in Rush County, stripe was fairly abundant.
EMERGENCY PLANT DISEASE PREVENTION PROJECT

OTHER REPORTS ON DISEASES OF SMALL GRAINS AND OTHER CEREAL CROPS

BARLEY DISEASES IN PENNSYLVANIA: Twenty-one fields of winter barley were examined between May 22 and 26, in Bucks, Montgomery, Chester, and Lancaster Counties. Fields were about equally divided between the Tennesee or Kentucky types and the Wong awnless variety. The grain was in the milk to soft dough stage.

Loose smut was found in 14 of the 21 fields. Affected heads ranged from a trace to 7% with an average of 1.2% for the 14 fields. Covered smut was found in only 2 fields. Less than 1% was present in one field, while the other had about 5% affected plants.

Leaf rust was seen in only one field; that was near Lancaster and the plants were about 20% affected.

Spot blotch was present in 18 of the 21 fields with an average infection of about 1.5%. Net blotch was found in 5 of the fields; about 1% was present in one field and from a trace to less than 1% in the other 4 fields. Powdery mildew was present in 20 of the 21 fields; incidence ranged from a trace to 20% with an average of about 5% for the 20 affected fields.--Robert C. Cassell, Emergency Plant Disease Prevention Project.

LEAF SPOT AND OTHER TROUBLES ON OATS IN INDIANA: Many of the Central Indiana oat fields surveyed during the period ending June 16 were found to be severely infected with Helminthosporium avenae. Prevalence of this leaf-spotting disease was 50% or higher in a number of plantings. Halo blight, although probably present, was not identified. Considerable oat acreage appeared stunted and yellow, possibly because of poor nitrification, and was far from reaching the heading stage. Late seeding may also have been responsible for the delayed growth in some sections in the central counties of the State.--J. S. Tidd, Emergency Plant Disease Prevention Project.

DISEASES ON WHEAT IN OHIO: A survey of wheat fields in the southwestern part of Ohio was made during the period June 18 to 23. The writer was accompanied by Warren C. Jacobs, Assistant Extension Pathologist, Ohio State University.

Leaf rust was 100% prevalent in all fields examined. Severity ranged from 25 to 80%. In a few fields practically all of the leaves were killed. Wheat in the southwestern portion of Ohio is in the milk to

soft dough stage of development. In the severely rusted fields it is expected that yields will be affected by the high percentage of shriveled grains.

Stem rust was found in every field, ranging from a trace to 1% in prevalence, with severity estimated at a trace.

Loose smut was observed in all of the fields in amounts ranging from a trace to 3%. On the average approximately 1% of the crop will be lost in this area because of loose smut.

Scab infection was observed in every field visited, causing a trace to 1% damage. In a few fields speckled leaf blotch was causing blighting of some of the leaves but in general was not causing appreciable damage. Helminthosporium leaf spot (H. sativum) was observed in many of the plantings but was apparently causing no significant damage.--Alvin J. Braun, Emergency Plant Disease Prevention Project.

WHEAT DISEASES IN INDIANA: Central Indiana wheat was well advanced and heading. Leaf rust varied in intensity, differences in varietal reaction to the physiologic race or races of the rust no doubt accounting for this situation. The most severely rusted fields noted were several of a bearded variety growing in Morgan and Johnson Counties in which nearly 50% or more of the leaf surface was covered with pustules. Intensity was much lighter on beardless wheat in this area, as was the case in most of Central Indiana.

Septoria tritici lesions could be found on leaves half way up the plants in most fields but apparently not causing as much damage as when the plants were smaller.

Loose smut was especially prevalent in several Marion County fields and also in Hancock and Madison Counties. From 0.5% to 10% of the plants were smutted in some fields in these counties. Elsewhere in Central Indiana, it occurred as a trace to 0.5%.

These observations were made during the 2 weeks ending July 16.--J. S. Tidd, Emergency Plant Disease Prevention Project

WHEAT LEAF RUST AND SPECKLED LEAF BLOTCH IN NEBRASKA: Leaf rust was very heavy last fall on winter wheat and overwintered in considerable amount, and has been present all through the spring. It has increased rapidly, but not as rapidly as might be expected, although there is an abundance of inoculum present at this time. Septoria tritici was rather bad last fall, then seemed to pass out of the picture for a while, but during the last few days is much more evident again.--K. S. Quisenberry, Division of Cereal Crops and Diseases. May 17

CONDITION OF CORN IN MINNESOTA AND SOUTH DAKOTA: Throughout Southern Minnesota and Eastern South Dakota, considerable seed rotting has occurred in corn. Stands are much below normal, and estimates in Minnesota indicate that up to 30% of the corn has been or will be replanted in Southeastern Minnesota, the figure dropping to 15% in the southwestern part of the State. In Eastern South Dakota, no estimates on replanting were obtained, but it is likely that conditions resemble those in Southwestern Minnesota. Seedling development is very slow and in every field seen east of the Missouri River plants were yellow and weak. Conditions are slightly better in South Dakota than in Eastern

Minnesota, but the only corn that approached normal condition was seen in the drier areas west of the Missouri River in South Dakota.--Ian W. Tervet, Emergency Plant Disease Prevention Project. June 5-14

FLAX IN MINNESOTA AND SOUTH DAKOTA: In 1944, stands in Western Minnesota and Eastern South Dakota were reduced because of seedling blights. There is very little evidence of any loss from seedling blights this year, no more than a trace of dying plants being observed in any field. There is much less chlorosis than in 1944, and flax appears to be more vigorous than any other crop.--Ian W. Tervet, Emergency Plant Disease Prevention Project. June 5-14

BACTERIAL BLIGHT OF ORCHARD GRASS OBSERVED IN OREGON

John R. Hardison

A bacterial head blight of orchard grass, Dactylis glomerata L., associated with a non-motile, gram positive bacterium and which apparently is Rathay's disease caused by Corynebacterium rathayi (E.F.Sm.) Dowson, was collected May 30, 1945, in the uniform grass nursery of the Division of Forage Crops and Diseases, Bureau of Plant Industry, Soils, and Agricultural Engineering, United States Department of Agriculture, located on the Oregon Agricultural Experiment Station, Corvallis, Oregon. This is believed to be the first report for this disease in the United States.

Symptoms were confined to the heads. A yellow bacterial exudate covers much of the spikelets in affected portions of diseased panicles. Some spikelets have only one or two florets affected while others are completely blasted. Stunting of plants, abnormal growth and involvement of leaves described for the disease in Europe were not observed.

The disease was found only on plants of the Akoroa strain of orchard grass, P.I. 133,327. Three replications of this strain of New Zealand origin are being grown in the nursery, and each contained diseased panicles. It appears that the disease was introduced with infected seed. It is suggested that the disease be looked for in other plantings of this strain and also in plantings of orchard grass with seed from New Zealand and European countries, especially Denmark.

Specimens are being submitted for deposit in the Mycological Collections of the Bureau of Plant Industry, Soils and Agricultural Engineering, Beltsville, Maryland.

DIVISION OF FORAGE CROPS AND DISEASES, BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING, UNITED STATES DEPARTMENT OF AGRICULTURE, AND OREGON AGRICULTURAL EXPERIMENT STATION, CORVALLIS, OREGON

DISEASES AND INJURIES OF FORAGE LEGUMES AND GRASSES IN WISCONSIN

Edwin E. Honey, J. G. Dickson, F. R. Jones, and J. L. Allison

Between June 5 and 20, inspections of forage crops were made in the southeastern, central, north-central, and eastern parts of Wisconsin by

the authors, either separately or in groups of 2 observers as opportunity permitted. Notes indicating changes in disease conditions since these inspections, obtained by J. L. Allison on a trip to Waushara County on June 26, also have been inserted in this report where pertinent.

Prior to May 20 cold dry weather with nightly frosts characterized the the central and northern areas of the State, whereas, in southern portions, especially, rainfall was too great for normal spring planting. Cool weather with rains (excessive especially in the southern areas) continued throughout the last of May and the first half of June. Frost damage was found widely scattered during late May and the first week of June.

Because of the cool weather pastures and hay crops have been slow to develop and are not so good as last year. An inspection trip to Northern Wisconsin between June 5 and 16 revealed that legume hay fields were being pastured in all counties visited because of the slow and inadequate growth of blue grass pastures.

This survey clearly indicated that red clover, generally grown in combination with timothy, is the major hay crop in Wisconsin. Alfalfa ranked second, but unlike earlier years, much less alfalfa was found growing alone. Alfalfa grown in combination with smooth brome grass has definitely become an established hay and pasture crop in the State. The war-time shortage of alfalfa seed is clearly evident in fields where farmers have stretched their limited supplies of seed with combinations of red clover and sweetclover. Sweetclover is rarely found growing alone but is very common in renovated blue grass pastures, where it is seeded in combination with red clover to supply supplemental grazing as well as to build up soil fertility. Ladino clover is the most recent pasture legume to show evidence of spread in the State. From the large number of excellent small trial plantings it is evident that Ladino acreages are on the increase.

Alfalfa. Alfalfa fields were examined in Dane, Iowa, Green, Columbia, Shawano, Langlade, Portage, Fond du Lac, Manitowoc, Brown, and Kewaunee Counties.

Downy mildew (Peronospora trifoliorum) was found to occur generally and abundantly, causing severe damage in some cases in Dane and Green Counties. Elsewhere in the counties inspected it was present in traces only and appeared to be of slight importance.

Blackstem (Ascochyta imperfecta) was observed in all counties visited. It was found to be especially severe in Green and Fond du Lac Counties, and occurred in traces or slight amounts in the other counties.

Frost injury was also prevalent in many alfalfa fields examined and the browning and blackening from frost injury was difficult to distinguish with certainty in some cases from blackstem. Certain fields severely injured by the early June frost, as in Marqeutte County, were found recovering nicely within a week's time by growth arising from branches below the frost-injured organs.

Leaf spots (Pseudopeziza medicaginis and Pyrenopeziza medicaginis) were found present chiefly on the under foliage and were causing slight damage.

White spot believed to result from physiogenic causes was reported as a bare trace in Columbia, Portage, and Langlade Counties only.

Spittle-bugs were found abundant and causing severe damage in Fond du Lac, Manitowoc, and Brown Counties, and somewhat less abundant in Kewaunee County. As alfalfa was in the pre-bloom stage at time of inspection, the striking inhibition of blossoming, caused by this insect last year, was not yet apparent.

Red Clover. Red clover fields were examined in Iowa, Green, Rock, Walworth, Dane, Sauk, Columbia, Marquette, Waushara, Portage, Langlade, Oneida, Shawano, Marathon, Waupaca, Wood, Fond du Lac, Winnebago, Washington, Ozaukee, Milwaukee, Waukesha, and Jefferson Counties.

Bacterial blight (Pseudomonas trifoliorum) [P. syringae] was found generally distributed in from a trace to slight amounts in every county visited, except in Waushara County where it was very much more severe. It appears that, in general, bacterial plant pathogens have overwintered well and weather conditions have favored their development and spread. Bacterial blight is present in much more than usual amounts this year. A more recent visit (June 26) to the Waushara County area revealed that a very severe epiphytotic of bacterial blight had developed in this county. Cutting was under way at this time, although rainy weather had delayed it some.

Northern antrhacnose (Kabatiella caulivora) was found to be severe in some fields in Dane and Marathon Counties and moderately severe in some fields in Columbia and Waushara Counties, whereas in other fields of these counties it was absent or present as traces only. In the area east of Lake Winnebago and south along Lake Michigan northern anthracnose was generally distributed in from slight to moderate amounts. In all other counties it was found only as traces.

Powdery mildew (Erysiphe polygoni) was more abundant than usual for this period and was generally distributed in slight to moderate amounts in all counties visited. Fields in Sauk, Marquette, and Waushara Counties are believed to have had heavier infections than in most of the other counties visited. Powdery mildew is much more prevalent than last year at this same period.

Leaf spot (Stemphylium sarcinaeforme) was observed in traces only. However, it is too early in the season to state how severe leaf spot may become, as it is primarily a disease of late summer and early fall.

Rust (Uromyces [trifolii var.] fallens) was observed as a trace in most counties visited. The most severe infection observed was in Ironton Township, Sauk County, where in one field a slight infection was present throughout. Rust, like leaf spot, may become much more severe later in the season.

Frost injury caused by low temperatures in early June appears to have affected the first flower developing, causing the flower head to be damaged in some cases. No evidence of frost injury was recorded on foliage.

Spittle-bugs were observed to be present on red clover in small amounts in Central and Northern Wisconsin, but were abundant especially from Lake Winnebago east to Lake Michigan and south along the Lake. There was no dvident damage to the red clover from spittle-bug.

Aphids were found present on red clover in many of the counties in small amounts. They would soon be moving to the pea fields.

White Clover. Very few fields of white clover were examined and

these were chiefly of Ladino white clover. These fields were very free from disease. However, in some white clover examined in Central and Northern Wisconsin the following diseases were noted as traces or in small amounts: sooty blotch (Cymadothea trifolii), pepper spot (Pseudoplea trifolii), and rust (Uromyces [trifolii var.] trifolii-repentis, aecia in Columbia County). In Waushara County bacterial blight was found to be very severe on small plantings of Ladino clover on June 26.

Alsike Clover. A few fields of alsike clover were examined, expecially in Portage and Iowa Counties, and found to be very free from diseases. Sooty blotch, in traces, was the only trouble recorded.

Sweetclover. Very little disease was observed on sweetclover. Blackstem probably caused by Mycosphaerella lethalis was found in traces in various counties, and a root rot believed to be caused by Phytophthora cactorum was reported from Fond du Lac County where it occurred scatteringly. Aphis were observed to be severe in Green County.

Smooth Vetch, probably Vicia angustifolia. Ascochyta leaf spot caused by Mycosphaerella pinodes was reported abundant in Manitowoc County.

Forage Grasses. On Timothy, brown leaf stripe (Scolecotrichum graminis) was reported abundant in Iowa County only; and stripe smut (Ustilago striaeformis) was found as a trace only in Green County.

On Smooth Brome leaf scald (Rhynchosporium secalis) was observed in slight amounts in Rock County. Brown leaf spot (Pyrenophora bromi = Helminthosporium bromi) and Selenophoma leaf spot (S. bromigena) were present in Dane County. Inoculum of the Selenophoma on the old overwintered stems was abundant.

As stated above, because of the cold spring Blue Grass pastures have been much slower in development this year as compared to last year. Powdery mildew (Erysiphe graminis) was observed generally distributed and in some counties, such as Iowa and Sauk, was found in considerable abundance. Rust (Puccinia poae-sudeticae) was observed in Portage County.

On Quack Grass bacterial leaf stripe believed to be caused by Xanthomonas translucens was found to be abundant in all counties visited, and especially so in Oneida, Langlade, Marathon, Portage, and Waushara Counties. Leaf blight (Helminthosporium tritici-repentis = Pyrenophora tritici-repentis) was common in Dane and Green Counties.

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DIVISION OF FORAGE CROPS AND DISEASES

OTHER REPORTS ON DISEASES OF FORAGE CROPS

ALFALFA DISEASES IN NEW YORK: Four alfalfa fields were examined during the week of June 3. Two were in Ontario County; the other 2 in Onondaga County.

Black stem was present in all 4 fields. One field at Allen's Hill

had about 20% with 3% girdling; one field at Canandaigua had about 2% with no girdling; one field at South Onondaga had about 15% with 2% girdling; a second field at South Onondaga had about 3% with no girdling.

Leaf spot (Pseudopeziza) was present in the 4 fields and ranged from 4 to 25% with an average of about 15%. Leaf blotch (Pyrenopeziza) occurred in 2 fields with a prevalence of about 2 and 3%.--Robert C. Cassell, Emergency Plant Disease Prevention Project

ALFALFA BLACKSTEM AND LEAF SPOT IN PENNSYLVANIA: Blackstem was found in 4 fields examined in Bucks County and in 3 fields examined in Montgomery County. Prevalence averaged 13% in the Bucks County fields, and 11% in the Montgomery County fields. No stem girdling was found in 2 fields, but in the other 5 from 1 to 8% of the stems were girdled.

Leaf spot (Pseudopeziza) was present in 6 of the 7 fields. Prevalence ranged from 5 to 35% with an average of 16%.--Robert C. Cassell, Emergency Plant Disease Prevention Project

ALFALFA DISEASES IN MINNESOTA AND SOUTH DAKOTA: Little winter-killing had occurred in alfalfa and red clover observed in Minnesota and South Dakota during the first half of May. Bacterial wilt was causing some loss to alfalfa in Southeastern Minnesota but no severe case of this disease was seen in that area. In the irrigated region of Western South Dakota, near Newell, some fields were severely injured by wilt; one field in which the disease has been developing during the last few years had a stand of about 25%, and of these surviving plants between 30 and 40% showed symptoms of wilt. Some fields of dry-land alfalfa had a few yellowed and dwarfed plants. All of the alfalfa in Western South Dakota appears to be of the Grimm variety or of other common alfalfas equally susceptible to wilt.--Ian W. Tervet, Emergency Plant Disease Prevention Project

ALFALFA LEAF SPOT IN MISSOURI: Pseudopeziza leaf spot was very prevalent during May and responsible for much spotting and some defoliation in this crop.--T. W. Bretz, Emergency Plant Disease Prevention Project

ALFALFA DISEASES IN NEBRASKA: Since previous reports, there has been a marked increase in downy mildew on alfalfa examined during the first half of May. This increase is greatest in first-year stands. Some of the most severely injured fields were seen in Washington County. In this area even old stands were attacked, sometimes severely. One 5-year stand near Fontenelle was seen where both downy mildew and bacterial wilt were severe. One field of first-year alfalfa 2 miles east of Fontenelle was seen in which it was estimated the loss from downy mildew would be 50% on the first cutting.

Yellow leaf blotch (Pyrenopeziza) and Pseudopeziza leaf spot were present sparingly in eastern fields. Damage from these diseases is slight to date.

During the week ending June 5, 19 alfalfa fields in 12 southeastern Nebraska counties were examined. An attempt was made to estimate the losses from disease attack in these fields. Downy mildew, common spot (Pseudopeziza), and yellow leaf blotch were present in all fields

examined, while bacterial wilt was seen in 8 old stands of alfalfa, and in 3 fields a leaf spotting by Pseudoplea (Pseudoplea trifolii) was diagnosed. The average estimated losses to the first cutting of alfalfa in southeastern Nebraska from these various diseases was calculated as follows:

Bacterial wilt	5.4 % loss
Downy mildew	3.0
Yellow leaf blotch	2.3
Pseudopeziza spot	0.9
Pseudoplea spot	Trace
Total .	11.6

C. M. Slagg, Emergency Plant Disease Prevention Project

ALFALFA DISEASES IN KANSAS: In the northeast counties yellow leaf blotch was the most prevalent disease in the 10 fields examined during the period May 18 to June 2. Downy mildew was causing considerable damage in young fields especially in fields in the Kaw valley. Leaf spot (Pseudopeziza) was also present in most fields. Pseudoplea leaf spot was found in a few fields, the perfect stage forming fairly large conspicuous spots with dark borders and pale centers. Bacterial wilt was present in most of the older stands.--Stuart M. Pady, Emergency Plant Disease Prevention Project

DISEASES OF RED CLOVER IN NEW YORK AND PENNSYLVANIA: During the week of June 3, one field of red clover was seen in Madison County, New York, with 30% target spot (Stemphylium sarcinaeforme).

In Southeastern Pennsylvania, a trace of rust and a trace of mosaic (virus) were found in a field near Cornwall (May 9), and from 1 to 2% of target spot was noted in one field in Montgomery County (May 22-26).--Robert C. Cassell, Emergency Plant Disease Prevention Project

NORTHERN ANTHRACNOSE AND POWDERY MILDEW ON RED CLOVER IN MINNESOTA: Red clover in Southeastern Minnesota during the early part of May was quite generally infected with northern anthracnose (Kabatiella), and it was thought that cool wet weather would undoubtedly lead to the development of another epidemic of this disease. However, the disease was still most prominent on red clover in that area but was not causing any appreciable killing of leaves and stems by June 7. A trace of powdery mildew was found in most fields.--Ian W. Tervet, Emergency Plant Disease Prevention Project

DISEASES OF RED CLOVER IN NEBRASKA: Five fields of medium red clover in Washington, Otoe, Nemaha, and Richardson Counties were examined during the week ending June 2. Powdery mildew (Erysiphe polygoni) was seen in a light attack in 2 fields. Pseudoplea leaf spot (Pseudoplea trifolii) was seen in moderate attack in all fields examined. One field in Richardson County showed a severe attack of blackstem (Ascochyta imperfecta) which caused blighting of plants in roughly circular

spots over the field. These blighted areas varied in size from 2 feet to 10 feet in diameter.

Only 3 fields of medium red clover in Eastern Nebraska were examined during the week ending June 23. Powdery mildew was plentiful in all fields. Leaf spots similar to those determined in 1944 to be due to Pseudoplea trifolii were also present in every field. One field in Burt County also was moderately attacked by rust.--C. M. Slagg, Emergency Plant Disease Prevention Project.

SOOTY BLOTCH ON CRIMSON CLOVER IN OREGON: Sooty blotch (Polythrincium [Cymadothea] trifolii) was prevalent on a cover crop of crimson clover in Lane County (May 4). This crop is not generally used in this area.--Lytton W. Boyle, Emergency Plant Disease Prevention Project

BACTERIAL HALO SPOT OF KUDZU IN MISSISSIPPI: The kudzu vine (Pueraria thunbergiana) is used extensively in the State of Mississippi for temporary pasture, for hay, as a cover crop, and by the Highway Department to prevent erosion of steep banks along the highway. Bacterial halo spot was first noticed this year on kudzu specimens from a diseased pasture in Noxubee County received by the State Plant Board. The disease has been unusually severe this season, perhaps owing to the abnormally low temperatures that prevailed up until June. Hedges (Hedges, Florence. Bacterial halo spot of kudzu caused by Bacterium puerariae Hedges. Jour. Agr. Res. 36: 419-428. 1928) has shown that the optimum temperature for the growth of the causal organism is 20 to 30° C.

A survey made through most of the State in May and June revealed that practically all of the kudzu plantings are affected by halo spot. Some pastures are dying out in large spots and in many of the older plantings along the highway there is considerable dying. The organism causing halo spot, Pseudomonas medicaginis var. phaseolicola (Burk.) Stapp & Kotte (Bacterium puerariae Hedges) lives over winter on diseased plant material and the new vines become infected the following spring. The disease is spread from place to place by runners or cuttings from diseased plants. In addition to its attack on kudzu, this same organism causes halo blight of bush and pole beans.--John T. Presley, Mississippi Agricultural Experiment Station, State College

THE STRAWBERRY RED STELE SITUATION IN MARYLAND

W. F. Jeffers

Red stele, caused by Phytophthora fragariae Hickman, was first definitely recognized in Maryland in 1935, but from reports of strawberry growers this disease had been prevalent for about 10 years previously. In the 1936 Proceedings of the Peninsular Horticultural Society, G. S. Langford and E. J. Anderson gave the first description of red stele in Maryland but used the term "black stele" in describing this disease. In 1937 red stele increased in severity on the Eastern Shore of Maryland and in the spring of 1938 surveys were made of this area to determine its severity and distribution. This disease was found to be causing serious losses near Federalsburg, Salisbury, and Willards. Part of

Table 1. Total strawberry acreage inspected in Maryland, 1939-1945

Year	Acres inspected	Acres condemned due to red stele	Percent condemned due to red stele
1939	914	157	17.1
1940	1009	79	7.8
1941	1045	66	6.3
1942	644	22	3.4
1943	508	23	4.5
1944	430	56	13.1
1945	334	29	8.8

Table 2. Acreage inspected for nurserymen.

Year	Acres inspected	Acres condemned due to red stele	Percent condemned due to red stele
1939	669	109.0	16.3
1940	690	42.0	6.1
1941	814	31.0	3.8
1942	461	4.7	1.0
1943	431	6.1	1.4
1944	255	6.8	2.6
1945	203	6.3	3.1

Table 3. Acreage inspected for other growers*.

Year	Acres inspected	Acres condemned due to red stele	Percent condemned due to red stele
1939	245	48	19.6
1940	319	37	11.6
1941	231	35	15.1
1942	184	17	9.3
1943	78	16	20.7
1944	175	56	28.4
1945	130	23	17.7

* Any person, not a regular nurseryman, who sells strawberry plants; usually berry growers who sell to nurserymen

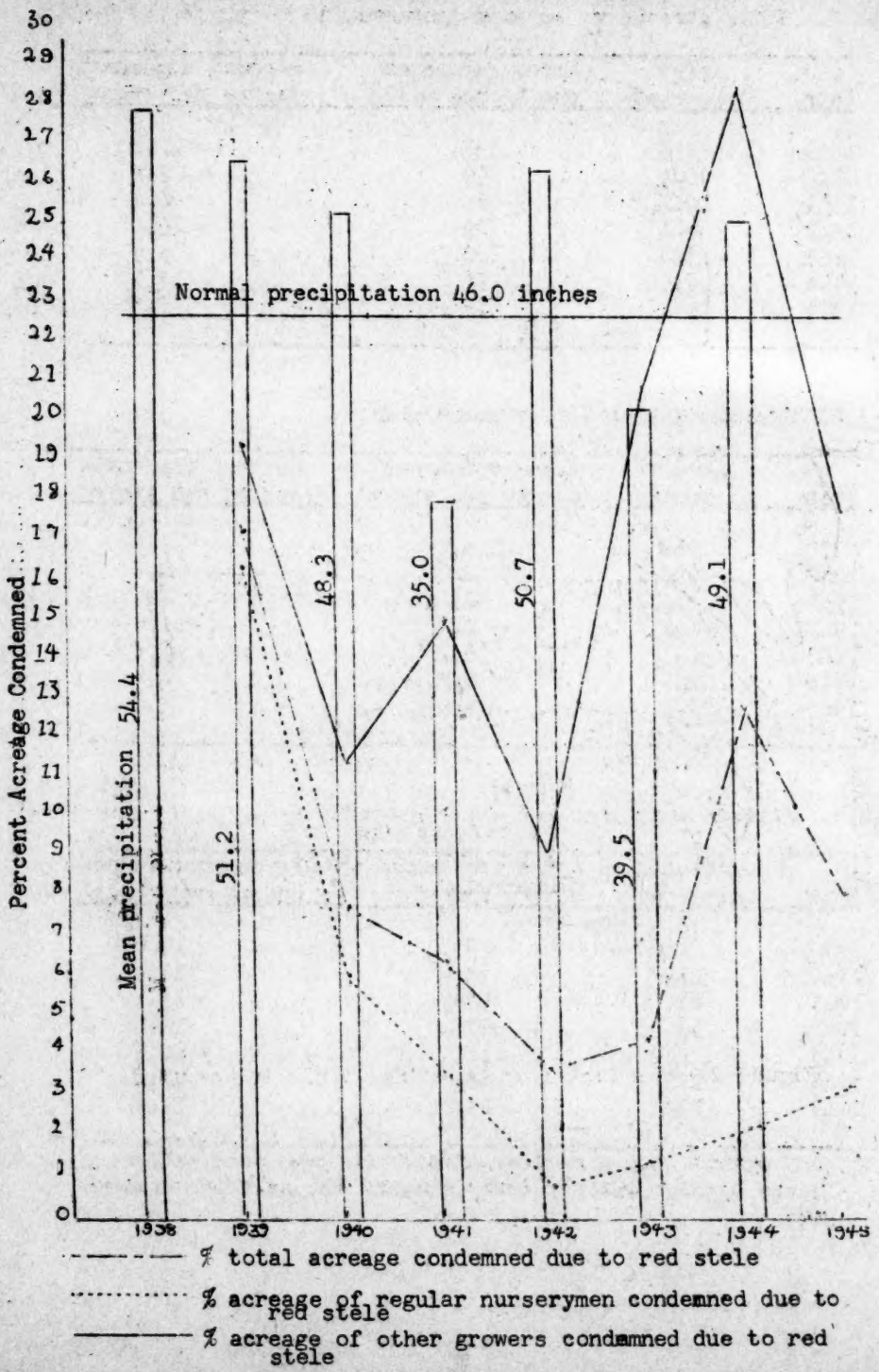

Figure 1. Percentage of Strawberry Acreage Condemned due to Red Stele in Maryland, 1938-1945

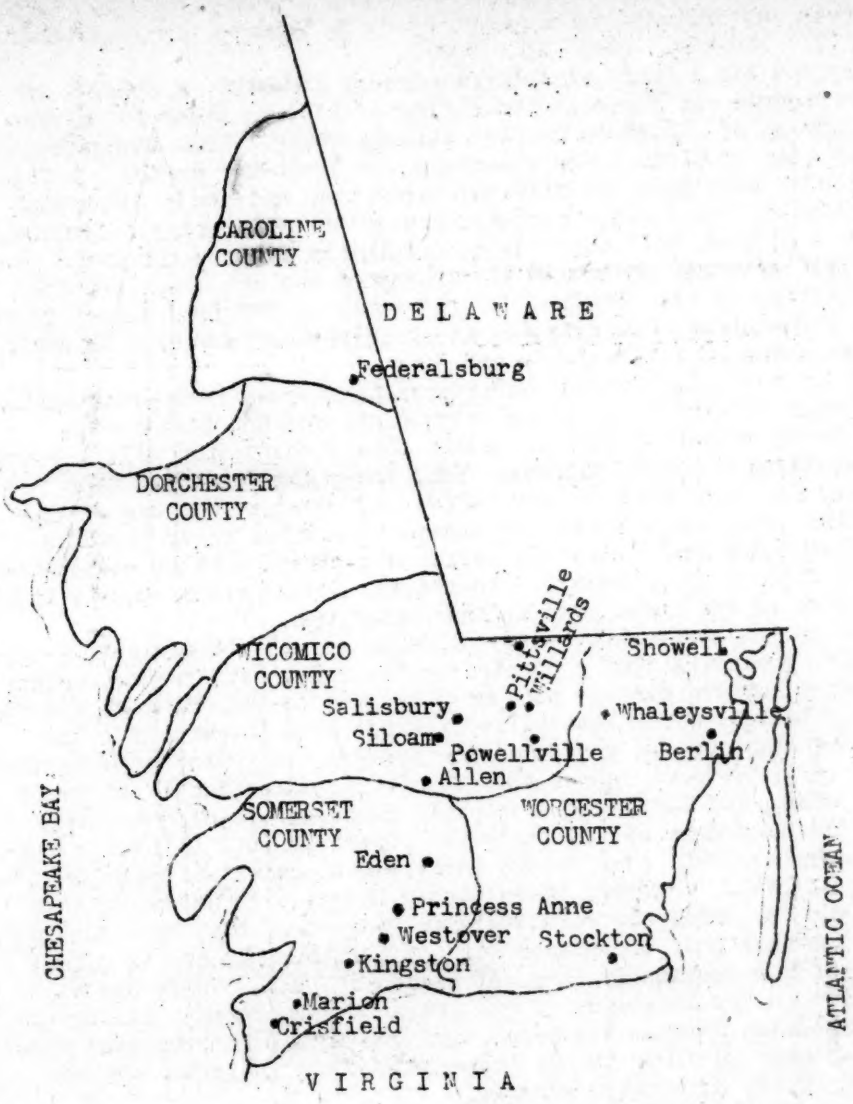

Figure 2. = Distribution of Red Stele in Maryland

this survey was included in a report by J. B. Demaree and H. F. Bain (PDR 22 (7): 108-109. April 15, 1938).

As Maryland has a large strawberry nursery industry, a special inspection program was begun in the spring of 1939 in order to prevent further spread of red stele through nursery stock. This inspection begins each year on March 1 and continues for about two months. A fall inspection is also made for diseases other than red stele and spring dwarf. Most of the fields inspected are grown by nurserymen especially for sale of plants, but other fields originally planted for fruit production are sometimes purchased by nurserymen and are also inspected. A clear picture of the incidence of red stele in Maryland during recent years is afforded by a compilation of the strawberry nursery inspection records as shown in Tables 1, 2, and 3.

Control of red stele for the strawberry nurseryman is now accomplished relatively easily by use of healthy plants and uninfested soil. However, berry growers cannot so easily obtain uninfested soil because their operations are more limited. Thus these growers often take chances and use land which is not definitely known to be free of red stele. Also berry growers are not always careful of their planting stock, often using their own or a neighbor's plants with no consideration as to freedom from disease. Therefore, these growers have a higher percentage of red stele than do the nurserymen.

To check on the possibility that incidence of red stele might be correlated with precipitation, a comparison was made, between the percent of strawberry nursery acreage condemned because of this disease and annual precipitation in the Pittsville-Willards area (Figure 1). The line representing acreage condemned for growers other than regular nurserymen is probably most representative of this situation as it would naturally occur, for little or no control measures are used by these growers. The incidence of red stele was lowest in 1942 following the very dry season of 1941 even though there was an excess of rainfall in the spring of 1942. However, there was an increase in amount of red stele in 1944 following the relatively dry season of 1943 but this may be due to the fact that the season was not sufficiently dry to offset the effect of the previously very wet season of 1942. There was a sharp decline in the incidence of red stele in nurserymen's fields after the inspection program was begun, and the annual fluctuations were much smaller than in other fields inspected. This indicates the effectiveness of the inspection program.

There was only a slight fluctuation in temperature for the years concerned and no positive correlation between temperature and amount of red stele was observed.

Distribution of red stele is mainly limited to low moist soil since the organism requires high soil moisture and the method of spread, in the field, is by zoospores. In Maryland, red stele is limited almost entirely to the three lower Eastern Shore counties. Here strawberries have been grown for many years and the dark, moist, sandy soil (Pocomoke loam), which is especially suited for berry production, provides nearly optimum conditions for survival and dissemination of the red stele organism. Figure 2 shows the present known distribution of red stele in Maryland, except for Beltsville where there is also some soil infested with red stele.

Red stele has been most severe in the Pittsville-Willards area; here nearly 100% loss results in some instances. In the spring of 1944, an acre of Lupton was so severely affected that it produced only 15 quarts of berries and similar losses are common. Many farmers in this area have been forced to discontinue the growing of strawberries, for most of their suitable soil has become so uniformly infested that the ordinary varieties will not produce a profitable crop.

Use of resistant varieties will probably be the only control of red stele for many berry producers in Maryland. At present the recently introduced Temple variety is coming into wide use in the Pittsville-Willards area as it has been grown successfully there for several years in soils where the standard varieties are almost a total loss. Several selections highly resistant to red stele are being tested, and many more seedlings are being grown. However, since it has been found that selections may be apparently resistant for several years and then become infected, new strawberry varieties for resistance to red stele can be introduced only after extensive testing in infested soil.

UNIVERSITY OF MARYLAND

REPORTS ON DISEASES OF APPLE AND PEAR

APPLE DISEASES IN SOUTHEASTERN OHIO: Orchards in the southeastern counties of Ohio were visited with Dr. C. C. Allison, Extension Pathologist at Ohio State University during the period May 7 to 12. Frost damage to the apple crop in this portion of the State was general, but losses were varied, being determined by elevation, air drainage, condition of bud development of each variety at the time of the freeze, the number of fruit spurs produced, as well as a number of other factors. In some instances the bloom was sufficiently heavy that a good crop would result despite the fact that many of the blossoms and developing fruits were killed. Some varieties in certain orchards completely escaped frost damage and thinning would be necessary. In most of the orchards visited at least a 50% crop was expected. The early leaves on some varieties, especially Jonathans and Stayman Winesaps, were injured (blistered, dwarfed and contorted) by the freezing temperatures.

In most orchards where a program of spraying was being followed scab (Venturia inaequalis) lesions were either rare or could not be found. In one orchard primary infections were quite common but secondary infections were rare. Because of the unusually early bud development and the early maturation of ascospores of the scab fungus this season, accompanied by weather favorable for infection, this grower was unable to apply the first spray in time to prevent infection. Many of the primary lesions in this orchard were "burned-out" by the sulfur sprays. In the only orchard where secondary infections were prevalent despite the application of the recommended sprays, a speed sprayer was being used. The pattern of infection on the trees suggested that complete coverage was not being obtained. When the grower demonstrated the machine, all agreed that the nozzle arrangements should be changed and that possibly the rate of travel during the spraying operation should be reduced. No scab infections on developing fruits were observed.

A trace of fire blight (Erwinia amylovora) was observed in 2 of the orchards. In one case the heaviest infection was in an area adjacent to a few badly blighted pear trees.

In several orchards frog eye leaf spot (Physalospora obtusa) was observed.

In one orchard in Athens County it was again necessary for the grower to remove a considerable number of trees because of the extensive killing of branches by the pox organism (Helminthosporium papulosum). During the past 10 years more than 100 trees were removed from this portion of the orchard because of pox. Pox was also causing moderate damage in another nearby orchard. In the other orchards, although generally present, pox was causing no appreciable damage.

Nitrogen deficiency was apparent in several of the orchards visited.

In one orchard in Jackson County lesions were developing at the ground line on the trunks of a number of trees, especially of the Grimes Golden and Rome Beauty varieties. The lesions generally involve more of the tissue above ground than of that below. The inner portion of the affected bark becomes reddish brown and the bark separates readily from the wood which remains sound. There is no indication of callus formation at the margin of the healthy tissue adjoining the discolored dead tissue. No evidence of fungus growth was apparent on any of the trees examined. The lesions only partially circumscribe the trunks and the leaves did not show symptoms of distress at the time of this observation. According to the grower the trouble is more prevalent in those areas of the orchard where the trees were most severely affected by last summer's drought. Many of the affected trees have been inarch grafted in an attempt to save them.--Alvin J. Braun, Emergency Plant Disease Prevention Project

APPLE AND PEAR DISEASES IN NORTHERN INDIANA: In company with Dr. J. R. Shay of the Purdue Agricultural Experiment Station, northern Indiana fruit orchards were inspected for disease during the week ending May 26, 1945.

Apple orchards totaling approximately 700 acres were visited in Howard, Allen, DeKalb, Noble, and Elkhart Counties, Indiana. Trees ranging in age from 6 years to 40 years were observed. Varieties were many with Jonathan, Stayman Winesap, and Delicious (both Red and Golden) probably among the most popular.

Except for one 24-acre orchard at Converse, Indiana where an excellent set of fruit was present, poor pollination (because of high winds, and cloudy, wet weather at blossom time), coupled with freezing injury during and following bloom, has resulted in an estimated 80 to 90% reduction in the northern Indiana apple crop. Some injury to leaves due to freezing was also evident. Foliage infection by the apple scab fungus was severe in several orchards in Howard, Allen, and DeKalb Counties. Elsewhere, prevalence and severity were in general light. It appeared that the best control of scab had been obtained when growers had applied lime-sulfur as many as 6 times prior to the calyx application instead of the 3 sprays usually employed. In 1945, the critical period for scab infection in the northern part of the State apparently occurred prior to blooming when heavy rains and showers were common. Phytophthora

trunk canker (Phytophthora cactorum) was causing the death of several trees of the Grimes variety in one 20-year-old orchard. No fire blight was observed on apples.

Fire blight was common on twigs and old branches in one of the 2 plantings of pears observed.--J. S. Tidd, Emergency Plant Disease Prevention Project

SYMPTOM EXPRESSION OF RUSTY MOTTLE IN UTAH SWEET CHERRY ORCHARDS

Arthur S. Rhoads

Rusty mottle (Marmor rubiginosum Reeves) is characterized by an array of quite dissimilar symptoms that develop in a definite progressive sequence during the growing season. While the characteristic symptoms of this disease in typical well-advanced cases are well known and readily recognizable, all may not be present at the same time, especially since a large part of the leaves developing necrotic spots, as well as others without any such development, become senescent and usually shed more or less extensively during late May and June. As a result of this behavior the picture presented by this disease is subject to wide variation during the growing season.

In the survey made of sweet cherry orchards in Weber, Davis, Salt Lake and Utah Counties during the period from the latter part of July to the end of September in 1944, the occurrence of rusty mottle necessarily had to be diagnosed on the basis of the symptoms present at this late season of the year. In many cases these were extremely meager, often limited to a slight necrotic spotting of the leaves not accompanied by the rusty chlorotic spots considered characteristic of the disease by Reeves. In many trees, especially in young orchard blocks, the amount of necrotic spotting frequently was extremely slight, in some cases so slight, even on bearing trees, that such trees were plotted with a question mark. Diagnosis largely or solely on the strength of the occurrence of necrotic spots, even though these spots were characteristic of those invariably associated with rusty mottle in its typical form, was considered highly questionable by some whose opinion was sought, and although it appeared to the writer to be a reasonably safe procedure under the circumstances, experience on this point was lacking.

On June 14, 15, and 16, 1945, in company with Dr. B. L. Richards, 14 orchards or parts of orchards showing cases of rusty mottle of unusual interest or abundance, in the 4 counties named, were revisited for observations on early symptom expression of this disease following a growing season delayed nearly a month by prolonged cold and rainy weather. In general, affected trees exhibited a great profusion of leaves with necrotic spots, which often were so abundant as to become confluent and kill large portions of the leaves, or sometimes to cause deformation from marginal dying and desiccation. In addition, trees markedly affected by the disease exhibited a great profusion of senescent leaves, often even in cases where necrotic spots were lacking, with many of these showing the ringspot effect reported by Reeves. In some trees extensive defoliation had already taken place. The characteristic rusty chlorotic spots were generally not especially apparent as yet.

A special effort was made to recheck trees that had been indicated as having rusty mottle largely or solely on the basis of necrotic spots when the incidence of the disease was plotted last summer and fall. With but 4 or 5 exceptions, even the trees regarded as so doubtful that they were indicated with a question mark now exhibited very striking cases of the disease, with more or less abundant necrotic spotting and early leaf senescence. In one 3-year-old block at South Ogden, where but 2 definite and 2 questionable cases of rusty mottle were plotted last fall in the 69 original living trees remaining, a survey made on June 17 revealed a total of 20 trees with definite cases of the disease. However, this planting, the youngest in which rusty mottle was found, was the only one in which appreciably greater number of cases was found in the June survey than during late summer and fall of the previous year.

It appears that, in the absence of typical symptoms of rusty mottle late in the season, even the meager occurrence of the necrotic spots associated with this disease constitutes a very reliable means of detecting it, and that a diagnosis made on this basis will err mainly in being too conservative in some orchards.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

A WILT DISEASE OF PERSIAN WALNUT IN CALIFORNIA

E. E. Wilson

During the past three or four years a wilt disease in Persian walnut trees (Juglans regia) has been observed in the San Joaquin and Sacramento valleys of California. From late June to mid-September the leaves of various branches throughout the trees suddenly wilt. As a rule the leaves do not show marked signs of distress prior to their wilting, nor do they abscise after wilting but remain on the branches well into the following winter. Though the disease usually begins in the smaller branches at the periphery of the tree, it may gradually extend to larger limbs in later years.

The bark and wood of affected branches are dead and discolored. Discoloration in the wood may at times extend for several feet back from the portion of branch that bears wilted leaves. Well defined discolored areas are found on non-wilted branches as well. In many cases the bark is affected for a year or more before the branch dies, and wilting ensues only when most of the sapwood is involved. The immediate cause of wilting is the plugging of the water-conducting elements by tyloses and an amber to dark brown substance that fills the vessels.

A variety of fungi are found in the bark of branches that have been dead for one season. In spring the sporophores of a species of Schizophyllum, and at times the fruiting bodies of a Nectria, develop on branches killed the previous summer. However, practically all isolations from branches that have been dead only a short time yielded another fungus which was present both in the bark and the sapwood. Spores of this fungus are produced in abundance beneath the bark periderm over diseased areas.

So far the writer has not found in the literature a description that adequately fits the specific or even generic characteristics of this fungus. Hence, fairly detailed studies become necessary. Inasmuch as such studies are incomplete and the results of pathogenicity tests not entirely conclusive, anything further concerning the fungus and its relation to the disease seems unwarranted at this time.

DIVISION OF PLANT PATHOLOGY, BRANCH OF THE COLLEGE OF AGRICULTURE, DAVIS, CALIFORNIA

SURVEYS AND OBSERVATIONS ON VERTICILLIUM WILT OF GUAYULE IN CALIFORNIA FROM 1943 to 1945

Henry Schneider [1]

Verticillium wilt of guayule was first observed in 1942 at Salinas, California[2], and it was suspected at that time that severe losses might result from the disease on heavily infested soil. In June 1943, several fields of guayule in Kern County, California, planted in the winter of 1942-43 by the Emergency Rubber Project, were found to be severely affected by Verticillium wilt.

In July, 1943, field experiments were begun to determine the best control cultural practices, the most resistant varieties, and the relation between environment and the disease. One report[3] has already been made on the study, and a final report on the experimental results is in process of preparation. The material herein reported is based upon field surveys[4] and observations made from 1943 to 1945.

The plantings made in Kern County in the winter and early spring of 1943 were from nursery stock grown at Salinas, California. The transplants grew very rapidly at first. Plants in the early stage of growth, when attacked by Verticillium, exhibited symptoms ranging from slightly perceptible wilting to collapse and death. Infection of lightly affected plants with slight external symptoms was confirmed by the discoloration of the wood of the branches.

Verticillium was most active during the flush of spring growth, because of favorable temperatures. Favorable conditions for infection occurred over a longer period than normal in 1943 because of a continuation of cool spring temperatures into June. The high temperatures in July, August, and early September 1943 in Kern County were unfavorable for the fungus and many diseased plants partially recovered. Variety 109, which is very susceptible but not planted to any considerable extent, began showing symptoms again in October. The other varieties showed further wood discoloration at this time but generally no external symptoms were apparent.

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[1] Formerly Assistant Pathologist, Special Guayule Research Project.

[2] Campbell, W. A., L. D. Leach, J. T. Presley and W. C. Snyder. Some diseases of guayule in California. Pl. Dis. Rept. 27: 63-66, 1943.

[3] Schneider, H. Verticillium wilt of guayule. Phytopath. 34: 936. (Abstract) 1944.

[4] These surveys were made in part by A. J. Braun

Field Surveys

A detailed survey was made in July 1943 of a 40-acre tract near Shafter, California, which was planted with variety 406. The field was divided into 39 plots and notes were taken on plant spaces chosen at random in each of these plots in such a way that 100 plants plus intervening vacant spaces were observed. It was found that 47% of the spaces had plants affected by Verticillium; 7% were severely affected, 12% moderately affected, 27% slightly affected, and 1% dead. Twenty-eight percent of the spaces had apparently healthy plants, and 1% had dead plants killed from some undetermined cause. Twenty-four percent of the spaces were vacant.

Twenty plants at each of 15 stations were examined and marked in July 1943 in the same field. They were reexamined in February 1945 as well as at intervals in between. Eighty-one of 127 plants originally determined as healthy became infected, as indicated by discolorations in the wood, but showed no external symptoms, 7 became moderately affected, 2 severely affected, and 2 died. Most of the plants that became more than slightly affected were in areas where most of the plants were already moderately or severely affected when staked for observation.

Table 1. Comparison of dry weight[a], rubber content, and yield of healthy and slightly affected 2-year-old plants at 3 stations in Peter's Field, Shafter, California, in March 1945[b,c]

Station	Healthy			Slightly affected		
	Dry weight in grams	Percent rubber	Pounds of rubber per acre	Dry weight in grams	Percent rubber	Pounds of rubber per acre
5	366.3	5.56	502.84	242.1	4.66	278.55
7	261.0	5.74	369.89	189.2	6.13	286.35
8	378.3	5.92	552.94	286.1	5.59	394.86
Average	335.2	5.74	475.22	239.1	5.46	319.92

[a]Differences in dry weight are significant at the 5% level according to the F test

[b]The figures are an average for 5 healthy and 5 slightly affected plants from each station. The first 5 of each type of plants at each station were chosen for analaysis.

[c]Analyses were made by the Rubber Laboratory of the Special Guayule Research Project

Of 116 plants initially marked as slightly affected, 107 showed no change in condition, 8 became moderately affected, and one died. In Table 1, the rubber yield of plants which at no time were more than slightly affected is compared with the yield of healthy plants at the same station.

Of 36 plants initially marked as moderately affected, 3 died, 4 showed no change, and 29 improved in external disease symptoms, but remained somewhat stunted.

Of 12 plants initially recorded as severely affected, 6 died, 1 improved to the moderately affected category, and 5 improved to the slightly affected category, but remained severely stunted.

Some time was spent in several of the guayule districts in California determining the number of acres in which infection occurred. The most detailed survey was made in the Shafter unit (2057 acres) in the Bakersfield District (Kern County). The survey was made in the spring of 1944 when the plants were one year old. It was found that 934 acres of guayule contained infected plants. Of these, 256 acres had between 75 and 100%, 386 acres between 50 and 75%, 156 acres between 25 and 50%, and 136 acres between 5 and 25%, of the plants infected.

Other units of the Bakersfield District surveyed in the summer of 1943 when the plants were in their first year of growth were found to be less heavily infested. The Wasco Unit (2460 acres) contained only 20 acres of scattered infested areas, and the number of infected plants was less than 25% in these. No infected plants were observed in the Lerdo Unit (2400 acres). The Arvin-Lamont Unit (700 acres) contained 144 infested acres with between 1 and 25% of infected plants and 73 additional acres with occasional infected plants.

Six-hundred-fifty acres planted in the Los Banos Unit of the Tracy-Newman District in the winter and spring of 1942-43 contained 35 acres of infested areas with from 1 to 10% of the plants infected.

In the Salinas District (Salinas Valley) about 400 acres out of 5000 planted in 1942 and 1943 were found to be infested. Most of this acreage contained between 0.5 and 15% of infected plants.

Discussion

From these observations, it may be concluded that plants that escape infection the first spring in plantations infested with Verticillium are very likely to become infected the following fall, winter, or spring. In general the older and more hardened the plants are when infected, the less intense the external symptoms. Most moderately affected plants tend to recover as far as external symptoms go, but they remain stunted. Some of the plants initially severely affected may partially recover in Kern County, where high summer temperatures occur, but remain much smaller than healthy plants. Based on the initial detailed survey and on subsequent observations and yields of plants in observation plots, the rubber yield of one 40-acre field was reduced about 25% by Verticillium wilt. Rubber content was not lowered in diseased plants, but the dry weight was considerably reduced.

SPECIAL GUAYULE RESEARCH PROJECT, SALINAS, CALIFORNIA

SUGARCANE MOSAIC IN MISSISSIPPI

Douglas C. Bain

Sugarcane is grown in Mississippi primarily for making syrup but some patches are raised to sell for chewing. Although the crop is limited somewhat in range, being grown principally in the area south of Newton, Scott, and Lauderdale Counties, and is rather limited in acreage, it is of importance. Judging from observations made during the past 2 years the principal varieties, in order of their occurrence, are Co. 290, CP 29/116, P.O.J. 213, and Louisiana Purple. Very few fields of Louisiana Striped (Ribbon cane) and Florida Green have been seen. Plantings are small, generally less than 1 acre, although there are many fields of 5 to 6 acres.

During the week of May 21 to 26, an intensive survey of cane diseases (mainly mosaic) was made with Dr. E. V. Abbott, of the U.S. Sugar Plant Station at Houma, and Mr. I. E. Stokes and Dr. M. L. Lohman of the Sugar Station at Meridian. Over 40 fields were surveyed. It was noted that by far the majority of the fields were in stubble cane and that very few fields had been planted this year. Shortage, poor quality, and high cost of labor were given as reasons for the small amount of cane being planted.

The variety C.P. 29/116 is the only one that is resistant to mosaic, produces a good quality of syrup, and is a good stubbler. For these reasons an effort is being made to replace the others with this variety.

Mosaic in Co. 290 is on the increase. The percentage of infection, however, appeared to be less the farther north cane was seen. The percentage of mosaic plants in the fields of Co. 290 varied from about 10 to a little over 90. Apparently, roguing of cane to be used for seed is not generally practiced. It was noted in one or two instances that corn growing near diseased cane also had mosaic. Also, in some fields the mosaic pattern appeared to be more severe (yellow) than in other fields. Whether this is due to strain difference is not known. In one or two fields of plant cane where non-germinated stalks were dug up and examined, red rot (Colletotrichum falcatum) was found to be present.

The percentage of mosaic plants in fields of P.O.J. 213 and Louisiana Purple was very high. Only rarely were healthy stalks found.

EMERGENCY PLANT DISEASE PREVENTION PROJECT

AN UNUSUAL DISTRIBUTION OF A RUST: AN AECIDIUM ON LIPPIA BERLANDIERI

William V. Eisenberg

In an inspection of commercial spice materials the writer had occasion to examine a sample of oregano (Lippia berlandieri Schau) from Mexico in which were noted clusters of white aecia on the lower surface of many of the leaves. These were accompanied by bluish-brown discolored spots on the lower leaf surface. A search of the literature and examination of specimens in the Mycological Collections of the Bureau of Plant Industry revealed for this host genus but one species described

with characters matching those of this fungus. This was Aecidium evansii P. Henn., collected on leaves of the related Lippia asperifolia Rich. in the Transvaal, Africa. It seemed strange that the same fungus species should be growing in two such widely separated areas.

Sections through the discolored spots revealed the preseance of numerous pycnia (spermogonia). In Hennings' original description[1] no mention is made of spermogonia. However, comparison of the aecia in the two organisms revealed them to be practically identical so that there seemed little basis for the establishment of a new species. Both organisms were submitted to Dr. George B. Cummins of Purdue University who reported that he failed to find any significant differences and agreed with our tentative conclusion that the Mexican rust fungus was Aecidium evansii. Such a discontinuous distribution is striking, since, as Dr. Cummins points out[2], the American and South African rust floras seem to have few species in common.

Lippia berlandieri is an aromatic shrub of the vervain family indigenous to Mexico where the leaves are used for seasoning food. In former years a relatively small amount of the material was exported to the United States where it was largely used by meat packers as a flavoring ingredient of pork sausage. Among spice dealers the product is commonly known as "curly-leaf oregano". During the war oregano has assumed added importance as a substitute because of the scarcity and unavailability of many Old World and Far-Eastern spices. The writer originally encountered oregano as a substitute for the common garden sage. The commercial use of oregano attaches an added practical interest to the rust fungus from Mexico.

A technical description of the Mexican rust fungus is included here to amplify the description already published by Hennings (l.c.). Although not mentioned in Hennings' original description, especially noteworthy as a diagnostic character is the peculiar invagination of the inner wall of the aeciospore exhibited by both the Mexican and African species.

Description of the Fungus. Pycnia epiphyllous, occasionally hypophyllous, few, gregarious, on bluish-brown spots 0.3-4.0 mm across, inconspicuous, subepidermal; brownish ooze becoming black; in vertical section 100-130 μ in diameter; ostiolar filaments short, agglutinate, 2 μ diameter; pycniospores subglobose, 1 μ diameter.

Aecia hypophyllous, closely crowded, occasionally scattered on bluish-brown discolored spots, 1-5 mm across, as many as 40 in a group, cylindric, deep-seated and raised above the surface, 0.5-1.0 mm high, 0.1-0.3 mm wide, white, submembranous; peridial cells in face view polygonal, mostly 6-sided, less often 5-sided, imbricate and often articulated, 12-16 x 22-25 μ, outer wall colorless, thick, 3-5 μ, transversely striate, inner wall colorless, thin verrucose; aeciospores colorless or pale yellow,

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[1]Hennings, Paul. Einige neue parasitische Pilze aus Transvaal von Herrn T. B. R. Evans gesammelt. Engler's Bot. Jahrbucher 41: 270-273. 1908.

[2]Cummins, Geo. B. 1942. Private communication.

subglobose to angular ellipsoidal, finely verrucose, 20-23 x 23-31 μ, outer wall 1-2 μ thick, inner wall exhibiting characteristic invagination when mounted in water or common mounting reagents (lactophenol, Patterson's Mounting Medium, etc.).

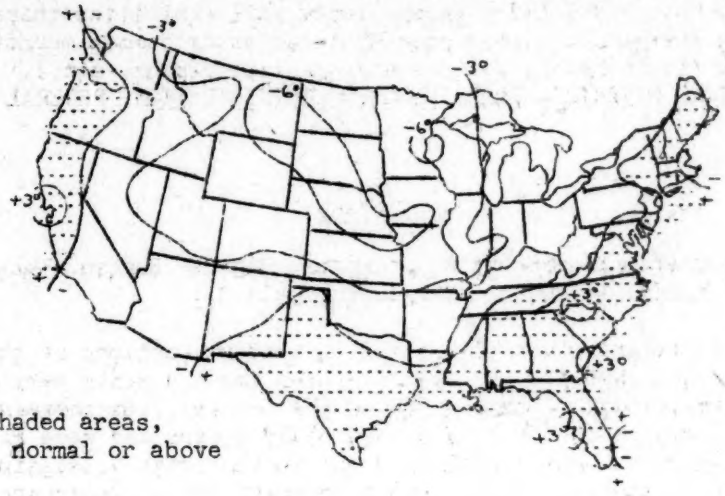
MICROANALYTICAL DIVISION, FOOD AND DRUG ADMINISTRATION, FEDERAL SECURITY AGENCY

JUNE WEATHER

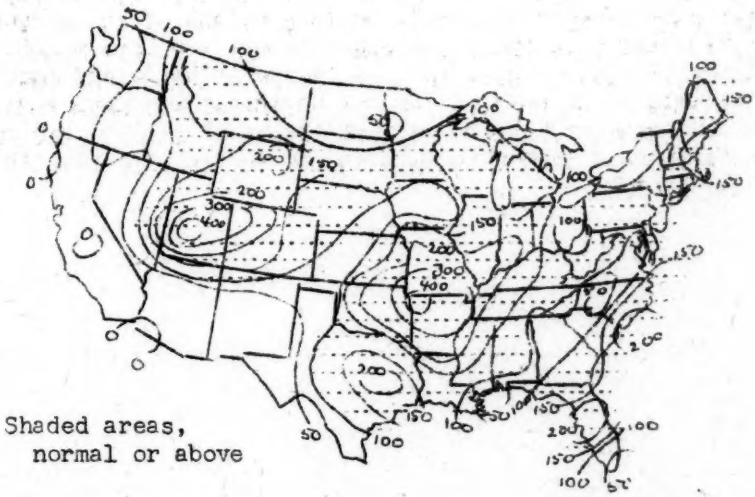
(From United States Department of Commerce, Weather Bureau, Weekly Weather and Crop Bulletin for week ending July 3.)

June 1945 was relatively cool and wet in central sections of the country. Map I shows that the mean temperatures for the month were subnormal in practically all central parts of the country, the above-normal areas being confined to the Atlantic and Gulf States and some Pacific sections. The month was especially cool in the upper Mississippi and Missouri Valleys and the central Rocky Mountain area. Departures were quite large, ranging up to 8° in the upper Great Plains, and most of the central areas of the country were from 4° to 6° below normal.

Map II shows that precipitation was above normal in most places from the Applachians westward to the Great Basin, except the Southwest. In the Ohio and central Mississippi Valleys the monthly totals ranged from twice to over four times the normal, while portions of the eastern Great Basin also exceeded twice the usual amount for this month. The totals were somewhat below normal in some Middle Atlantic and South Atlantic States as well as in portions of the Northeast and Lake region. Much of the Southwest had less than half the usual amount, and some localities, notably in southern New Mexico and Arizona had less than 20 percent of the normal.



Map I. Departure of Mean Temperature from the Normal for June 1945



Map. II. Percentage of Normal Precipitation for June 1945

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